

The IDAHO
FORESTER

Vol. XV.
1933





" . . . I love Idaho for its far-flung forests, . . . "



" . . . where one may go in solitude, and in the sighing of the pines, hear the whispering of nature's music. . . . "

THE IDAHO FORESTER

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DEDICATION

In grateful recognition of his service to the cause of forestry in the State this edition of *The Idaho Forester* is dedicated to
The Honorable H. C. Baldrige
Former Governor of Idaho

THE RELATION OF THE FOREST TO IRRIGATION

HONORABLE H. C. BALDRIDGE
Governor of Idaho 1927 to 1930

THE relation of the forest to irrigation is a close one and without the coverage incident to the growth of the forest our irrigation would be materially reduced. That we may get the value of this relationship I shall first discuss the irrigation development of our state. I shall then endeavor to show what the forest means and has meant to this vast irrigation development of Idaho.

Idaho is blessed with the largest supply of water of any irrigated state on account of having within her boundary a very large percentage of the Snake River and its tributaries. Idaho also has a large body of land which on account of the character of the soil is well adapted to irrigation. Having the water and this fine area of land, coupled with ideal climatic conditions, a progressive and enterprising citizenship has placed Idaho in the front rank among the irrigated states.

FARMING PRIOR TO CIVIL WAR

Irrigation development began in Idaho about the middle of the nineteenth century in the southeast section of the state near the present town of Franklin, the first project being developed in that section by a group of Mormon pioneers. It is estimated that in 1860 the total amount of irrigated land in the State was less than 1,000 acres. Irrigation now extends entirely across the southern portion of the State, following generally the Snake River with sections here and there along the way still in sagebrush.

In the northern end of the State there are some irrigated tracts also, among the largest being the Rathdrum prairie and the Lewiston tract. The Boise River Valley and the so-called upper Snake River Valley began irrigation development about the same time as those in northern Idaho.

In southwest Idaho, some irrigated tracts are found in the Bear River Valley while others are in the Snake River Valley and its tributaries.

TWIN FALLS PROJECTS IMPORTANT

The development since 1900 has included two of the largest tracts in the State, the Twin Falls and South Side, and the Boise projects. The completion of the great American Falls reservoir in 1927 was an outstanding event in irrigation accomplishment both in the State and in the Nation. It is the largest reservoir in the State, having a capacity of 1,700,000 acre feet.

At the time of the dedication of the American Falls dam Dr. Work, then Secretary of the Interior, made the statement that in its construction we had the most outstanding evi-

dence of co-operative effort between the Government and private interests that had ever been undertaken by the Government up to that time.

The latest development in irrigation enterprises is the Gooding division of the Minidoka project which was completed in 1931. This project includes new lands, but the greatest urge for its construction was to give a full water supply to lands with a partial water right and which were urgently in need of additional water.

More than 2,500,000 acres of land are now under irrigation in Idaho. It is estimated that these 2,500,000 acres comprise some 30,000 farms, which should have, and will have under normal conditions, a value of \$375,000,000. In normal times these irrigated acres will produce annually approximately \$75,000,000 of wealth.

IDAHO HAS POTENTIALITIES

A large percentage of our population finds employment in the cultivation of our irrigated farms, without which our agriculture would be of little consequence as a State. The major portion of our people have employment for which our irrigated farms are directly or indirectly responsible.

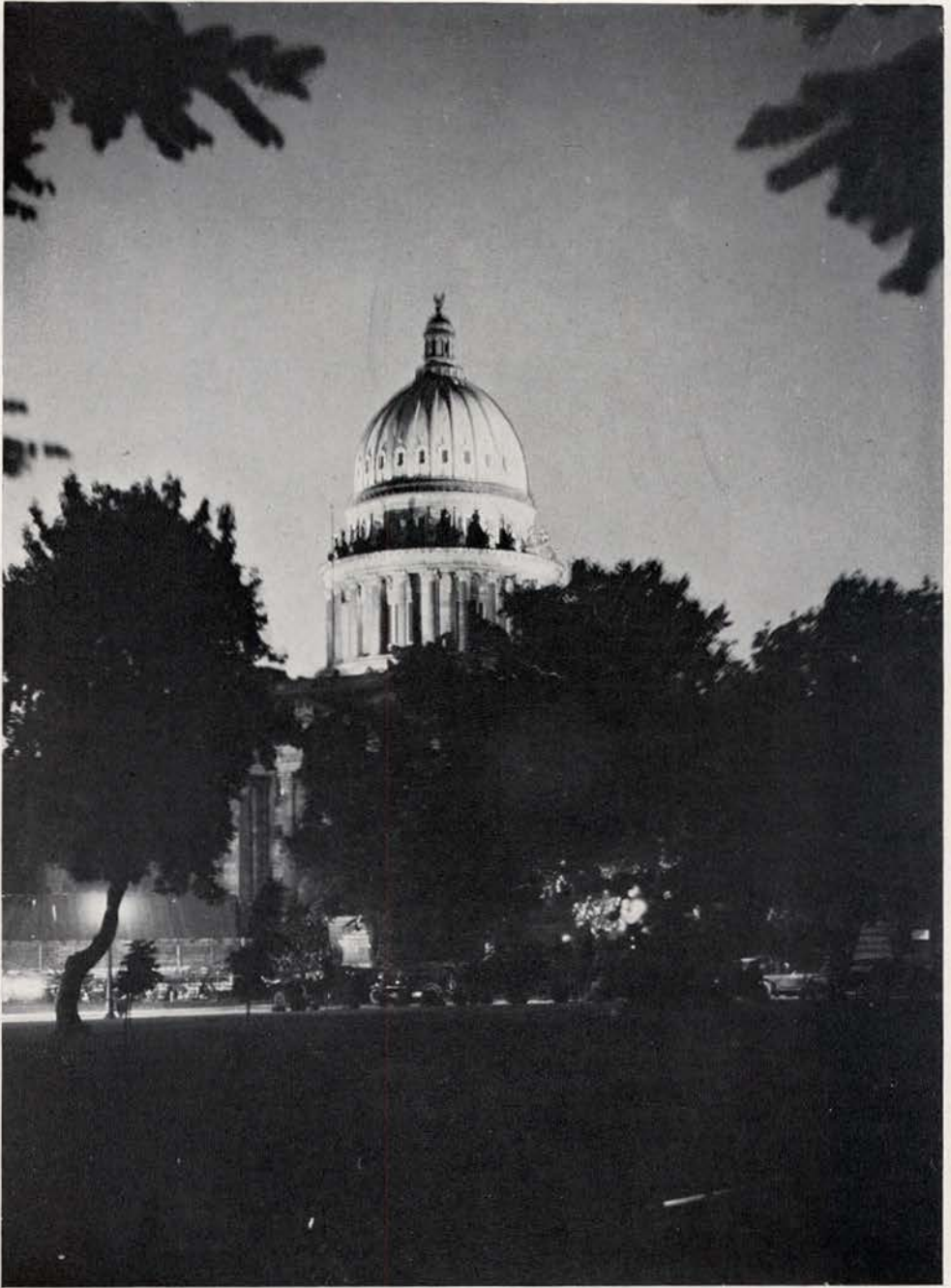
Idaho still has thousands upon thousands of acres of land from the standpoint of soil, topography and climate which are well suited to irrigation. Great quantities of water running away each year unused doing no one any good save and except possibly developing electrical energy of which we have a potential development of at least 5,000,000 horse power. When the time comes, as it will, when we need more land in cultivation, Idaho can furnish the land and the water which will continue to produce food and give employment to other thousands yet to come to our fair State.

PROTECTION OF WATERSHEDS VITAL

We shall now give our attention to the discussion of our watersheds which hold the source of the water which annually comes down to make our thirsty lands produce and which, after all, is the thing which makes our deserts "blossom as the rose."

These watersheds, for the most part, are covered with forests, brush, and other vegetation. Much of the watershed area lies within or adjacent to national forests.

In times past much discussion has been provoked because of the manner in which our forest areas have been handled, with regard to cutting of timber, grazing, fire protection, and all factors which in turn have more or less affected the plant cover. This plant coverage



The State House, Boise, Idaho

in turn may and does influence the water supply and its usability. Until recent years little attention has been given to reforestation and the protection of our watersheds without the thought in mind of continuing and perpetuating the coverage which is needed to conserve the water supply.

The conservation of the plant coverage such as the forest tree and other vegetation is necessary that the snow be retained to prevent early "runoff" of which we have heard much complaint in recent years from our irrigation farmers. The Forest Service from its inception has recognized the need for protection of these forest areas from the standpoint of the water supply and its use.

GENERAL PUBLIC CONCERNED

The writer, in 1929, as a member of the State Land Board, in company with representatives of the Forest Service, Southern Idaho Timber Protective Association, and lumber operators, made a survey of the Boise and Payette watersheds for the purpose of studying plans for protection of the forests and forest vegetation and the conservation of the water supply for irrigation. The same year a group of farmers and irrigators made similar investigations. This all indicates the interest of the public which is very great in the subject of the relation of the forest to irrigation.

There is no doubt of the need for study of the use and handling of the forest and forage and other resources on the watershed in such a way that the handling of the same may be compatible with the welfare of irrigation development. These resources supply the basis for range livestock production and the lumbering industry, both of which are not only essential to the State, but are also interrelated with irrigation farming in the interchange of commodities and all interested in the general upbuilding of the State.

The U. S. Forest Service realizing the importance of protecting our watersheds started about 1929 an intensive and continued study of erosion. This is being done because Forest Service officials recognize the menace of erosion to reservoir and canals, as well as the need for preservation of vegetation upon our watersheds.

FUTURE GENERATIONS CONSIDERED

Methods of cutting timber on our watersheds, slash disposal and grazing are all being studied that we may preserve and perpetuate forest growth and all vegetation for the benefit of ourselves and posterity.

Another factor in the relationship between the forest and irrigation is the development of electrical energy which is now being used by the farmers almost all over the irrigated section. Were it not for the conservation of water upon these forest-covered watersheds which results in stream flow in our rivers being maintained throughout the year, power development could not have been promoted.

This utility has come to be a valuable asset to our State and especially to our farmers. Electric power for use in pumping plants for irrigation and the use of electricity upon Idaho farms has become more or less common. Perhaps no single thing has done so much to remove drudgery from the farm as the use of electricity.

The annual flow of water from our forest-covered watersheds, the development of power upon our rivers, the use of water for our irrigated lands, has made Idaho a leader among the intermountain states. Our great diversity of crops, and our large acreage production are not excelled by any state and equalled by few if any.

LUMBERING IDAHO'S SECOND INDUSTRY

Again our large and extensive forest areas furnish summer range for vast herds of sheep and cattle which in turn, in winter, find feed upon our irrigated farms to the profit of both the farmer and livestock man. Our forests provide a large amount of lumbering which is the second largest industry in the State, agriculture being the largest. The lumber industry employs a large number of men in normal times and thereby furnishes a market for no small amount of the products of the farm.

Our irrigation farmers are interested, along with all our people, in the large State holdings of the largest stand of white pine to be found in the United States. The timber owned by the State was valued at \$35,000,000 a few years ago. Though it is not worth that amount now the time will come when it will be worth even more.

The writer has endeavored to outline some facts which show the relation existing between our forests and irrigation. The loss of either our forests or our irrigation would ruin our State. It is therefore necessary that we preserve both. So as a state we have sought in recent years to protect our forest by legislation which we believe is proving beneficial to the public and to those who are interested privately in the conservation of our forests for the benefit of posterity.

Timber protective associations are functioning throughout the State, which organizations co-operate with the Federal Government, the State, and private interests to the end that all may receive a maximum benefit in the protection of our forests.

The writer desires to express appreciation to Dean Francis Garner Miller for the very fine service he has rendered as Dean of the School of Forestry of University of Idaho and especially for services rendered during the period the writer was Governor of Idaho.

The writer desires also to express his appreciation to former Commissioner of Reclamation George N. Carter and Harry C. Shellworth, President of the Southern Idaho Timber Protective Association for data furnished in preparation of this article.

THE BENEFITS AND SERVICES RENDERED BY THE NATIONAL FORESTS OF THE STATE OF IDAHO

M. H. WOLFF

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PRIMARILY Idaho's welfare is founded on its lands. Its small proportion of manufacturing activity is essentially involved in the conversion processes of the raw materials from its own forests and mines. The state's welfare depends primarily on the products of the fields, the ranges, the mines, and the forests. Land is the basis of all these—land and its utilization.

Of Idaho's gross area of 53,000,000 acres about 23,000,000 are forest lands. The federal government owns about 79 per cent of the timbered area, practically all within the national forests, the State of Idaho about 4 per cent, and the private owners the remaining 17 per cent. Just so much as the large forested proportion of the state area is a material influence on the social and economic development and welfare of the state, so correspondingly have the national forests, composing virtually three-fourths of the total area of forest lands, a very considerable place in serving local social and economic needs.

The helpful influences of the national forests in Idaho on the state's welfare are many and varied. They are the basis of direct financial returns to the local government units and to the people in the form of actual cash payments or equivalents to the counties and the State, and of a source of employment and a market for local trade as the result of the national forest work.

INDIRECT BENEFITS VARIED

Very appreciable as are these direct financial returns, of far greater importance in the immediate and long-time economics and social welfare, locally, are results of the beneficially planned utilization of the national forest resources and their development and protection. These might be termed, for distinction from the direct financial contributions to the state, as indirect benefits. The national forests are a source of raw materials for the timber-using industries, logging and milling of lumber materials and the production of other timber items, such as poles, posts, and pulpwood. They insure a certain degree of stability in the production of these materials and provide a feasible way for continuing in timber production lands not now government owned, which otherwise threaten in large part to become waste and idle. The national forest ranges, under constructive management, provide forage for livestock producers and also furnish this pasturage in a manner which promotes the stabilization of the livestock business. The beneficial effect of the forests on erosion and floods and other injurious variations in waterflows is reflected in nothing

but good for irrigation interests and water power users. The forests provide an enormous recreation ground for the inspiration, diversion, and play, first, of the local population, and secondly, for outside people and through that an additional source of business revenue.

Most immediate of the direct financial benefits to the state is the federal government's payment to the counties for road and school purposes of 25 per cent of the *gross* revenue obtained from the payments and fees coming from the use of the forests and their products. This virtually amounts to a 25 per cent non-assessable equity in these lands. The value of any land is in direct relation to the net rentals therefrom. Considering that the rental returns cannot be obtained without at least some expenditure, and that the payments to the counties are based on *gross*, not net receipts, the counties' interest might be considered as even materially in excess of 25 per cent. It is to be noted that these incomes are truly current rentals and not the removal of principal values, since a fundamental of national forest utilization is use without depreciation. This 25 per cent when applied to timber is really the equivalent of a 25 per cent yield tax; this far exceeds the most hopeful yield tax rate ever proposed in this or any other state.

ROAD AND SCHOOL REVENUE LARGE

This 25 per cent contribution in Idaho for the six-year period preceding the fiscal year 1931, when the effects of the depression became evident, totaled \$979,686, indicating a normal average at this stage of development of about \$163,000 per year. This income is based on only a partial utilization of the national forest resources; with the more complete utilization fully to be anticipated in the future the returns to the counties can be expected to increase.

In addition to contributing this 25 per cent of its gross income to the counties, the federal government spends 10 per cent of its gross income in any state for road construction within that state. An appreciable part of this replaces an equivalent amount that would otherwise have to be expended for this purpose by the local governments. Hence, that amounts to an additional financial contribution. The 10 per cent road fund apportionment to Idaho has reached an aggregate of close to \$1,000,000.

While the 10 per cent road construction has attained considerable proportions, it has been vastly exceeded by the direct appropriations made by the federal government for forest highways and forest development projects. These have been separate and apart from Post

Road or other Federal Aid projects. The amount of money allocated to the state from these appropriations has been dependent in considerable part on the acreage of federal forest lands in the state. At one time these contributions were figured at three cents per acre per annum based on government-owned lands in the state. In recent years they have been much greater. Up to July 1, 1932, the funds thus expended for direct road construction and road maintenance work by the Federal Government aggregated \$9,500,000 for major public roads and \$8,900,000 for forest development roads and trails. Since the major roads are of primary importance to communities in or near the national forests, their construction by the government replaces an equal cost of construction which would have had to be undertaken by the counties or the state, if not carried on by the government. The forest development projects in part provide development which otherwise would have had to be undertaken by local agencies.

GOVERNMENT SPENDS OTHER MONEY HERE

The government's expenditures for administration protection and development of the forests aggregate a very appreciable total. Practically all of the payroll expenditures in the state are put into circulation locally. There are close to 200 year-long forest service employees living in the state, varying from the highly trained, long experienced forest supervisors with heavy responsibilities, to the newcomers among the rangers, all of whom in normal times receive salaries aggregating about \$475,000 annually.

The recurrent seasonal employment of temporary men for prevention and control of fire and forest diseases, for the construction of forest development roads, trails, telephone lines, lookout houses, and other necessary structures, provides a tidy payroll. In the seven national forests in northern Idaho alone this is estimated conservatively to have averaged during late years upward of 2000 men for an average of about three months each year. These 6000 man-months represent around \$500,000 in wages alone. This employment is in large part made up of local residents, and a very great proportion of their compensation is put into local channels of trade. The temporary occasional crews, specially recruited for suppression of large fires, have aggregated 2000 men yearly; while many of these have been obtained from outside the state, practically all available and suitable local men have been used first, and a very large proportion has been local, and a large part of their wages has been spent within the state. Large aggregates are spent on such things as subsistence, materials, equipment, transportation, rent, horse feed, and similar items necessary for carrying on this large field enterprise. The state's usual annual in-

come from the government's national forest activities is indeed of considerable moment in the prosperity and welfare of the state.

CIVILIAN CONSERVATION CORPS

This year a new enormous expenditure by the federal government is in the way of being made in the national forests of Idaho. The Civilian Conservation Corps, while it will largely be composed of men recruited from other states, will include a great number of Idaho citizens likewise and will liberate large amounts of money into the local channels of trade.

Altogether it can safely be said that the direct financial contributions of the federal government, as a result of its national forest enterprise in the eighteen forests in Idaho, far exceed what would have been the tax returns to the counties if the land now in national forests had been permitted to lie open to public entry (mining laws are still, of course, unrestrictedly applicable) and had been privately acquired. It is to be noted that after all but a small proportion of the national forest property would have been privately acquired and retained in private ownership as worth while for a private owner to hold, administer, protect, develop, and pay taxes on.

Of the indirect benefits of the national forests the government's timber production efforts have been and will prove permanently to yield the greatest return to the state and its people. This is by providing a source of timber conversion activities both present and potential. It is not in filling the needs of the state for lumber itself, although it is not at all amiss to have available near at hand at no great cost of transportation virtually an unlimited supply of timber for use by the mines, the farms, and other less prominent activities in the state, and although the government policy is to sell, at cost of making and administering the timber sales, all material needed by local settlers, and to give away all dead material free of charge.

Idaho's output of lumber alone has averaged between 800,000,000 and 850,000,000 feet annually. It has been estimated that each thousand board feet of timber logged and manufactured brings between \$20 and \$25 in labor, supplies, and equipment paid out in the local community. While most of the cut in the past has come from privately owned lands, the end of privately owned timber as a material quantity exploited annually is not very many years away. In northern Idaho, for instance, private timber holdings will at normal cutting rates be cut out generally in from eight to fifteen years, with only a few exceptions running a little longer. Very obviously the \$22.50 for each thousand feet of timber cut that goes into local circulation will have to depend more and more on the government timber as time goes on.

YIELD CAPACITY DETERMINES CUT

The amount of national forest timber that may be cut in any year is controlled by the sustained yield capacity of the forest land. The yield at the present time, based on the present forest land acreage, is in the neighborhood of 550 to 600 million feet annually. This is much below the past average annual cut in the state. Furthermore, a large proportion of this yield is in species not now in great demand, or consists of the younger stands too small to fill market requirements, or is so inaccessible that for quite a number of decades it cannot be economically utilized. Consequently, there promises to be a material gap in the lumber industry's output for a period commencing about fifteen or twenty years from now until about fifty or sixty years from now, when the younger stands come into merchantability. What this means to local welfare needs no emphasis. The effect of cessation of lumbering activities in several of the counties and towns in northern Idaho is already well known.

However, looking ahead to the future the national forests are definitely a provision; first to ameliorate the trying conditions resulting from cutting out of timber; and second, to build up the raw material output to even greater yield possibilities than hitherto have been utilized.

The first is accomplished through limitation of cutting on national forest lands to their sustained yield. A movement is further on foot, using the government timber as a foundation and nucleus, to work out a scheme involving northern Idaho timber whereby the timber of other than government ownership will be thrown in with it and together be cut and managed on a sustained yield basis.

SECOND GROWTH ESSENTIAL

The second growth is accomplished through the care and protection the government is giving to its young timber growth of no present commercial value as well as to the older merchantable stands. Such a policy is not fully pursued by any other forest landowner in the State of Idaho, not even the state itself on its own land. Its accomplishment is also furthered through the authority for acquiring cut-over or young growth areas, nonagricultural in character, heretofore privately owned and adding them to the existing national forest lands. The lands thus added, having been selected for their timber quality in the days of free public land acquisition before the institution of the national forests, are generally far better than average in timber production capacity. Hence, the future yield of the national forests will be increased far out of proportion to the increase in acreage.

Utilizing land unfit for agriculture, keeping land productive which otherwise would lie waste, and at no cost to the state, cannot otherwise than benefit the state. It is well

known that vast acreages of privately owned land, cut-over, burned, or with unmarketable second growth, which have no value for agriculture or any other purpose than timber production, are going back to the counties through tax delinquencies. The counties, even though their officials realize full well their responsibility and the vital importance of custodial attention to these lands, are financially unable to undertake this burden. The state cannot do so. Somewhat limited authority is available for the government to take over these lands. This has afforded a means for keeping much of these "new public domain" lands productive and in the way to deliver their manifold benefits to the people of the state.

INVESTMENT FIGURES LARGE

In these ways the national forests are playing the part of bringing stability to the large lumbering and allied industries of the state upon which very many other gainful occupations depend in great part. In 1927 there were in Idaho 96 lumber and timber products establishments, over 10,000 salary and wage earners (average for the year); salaries and wages totaled over \$14,000,000 and materials, fuel, etc., exceeded \$10,000,000. The value of the manufactured product exceeded \$30,000,000. The figures for 1929 were appreciably higher, but 1927 data are accepted as more conservative. The \$22.50 per thousand feet that is estimated as going into local circulation, on 800,000,000 feet of annual cut comes to \$18,000,000. The figures from one large lumber company indicate that on an investment of around \$9,500,000, about \$2,500,000 yearly has circulated in the local communities for the past two decades.

The lumber and allied industries comprise directly a material part of the taxable property of the state. From the 1931 report of the Idaho State Board of Equalization is indicated that this comes to between \$45,000,000 and \$50,000,000. Just how much more taxable values come from business, residence and similar properties, and even public utility values, and farm values stimulated by local markets resulting from the lumbering industry, it is impossible to determine, but unquestionably their aggregate is very great. The continuance of the tax return from these properties is inevitably bound up with the continuance of these industries.

Of vast importance indeed in the economic welfare of the state in the future is the assured stability of raw material production. This assurance of a stable output of forest crops is not or cannot be assured by any other agency than the federal government. Despite these enormous benefits, the obligation has not been undertaken by any of the county governments and is redeemed in only a secondary way by the state. While the justification of the federal government's raising tim-

RANGE MANAGEMENT ON INDIAN LANDS

J. P. KINNEY

Director of Forestry, U. S. Indian Service

THE total area of land within the United States in which the Indians own a beneficial interest exceeds 71,000,000 acres, and is approximately equal to one-half of the net area of Federally-owned lands included within National Forest boundaries. The relative proportion of Indian lands that may be classed as forest lands is much smaller than the relative proportion of timbered lands within the National Forests; the proportion of rough mountain land in the National Forests is greater than within Indian reservations; and the area of open grass land within the reservations is proportionally greater than within the National Forests. These disparities are chiefly due to the fact that Indian reservations comprise large areas in the Plains Region, east of the Rocky Mountains, and in the semi-arid portions of Arizona and New Mexico.

AREA OF INDIAN GRAZING LANDS

The forage on the grazing areas within Indian reservations west of the Rockies is comparable to that on National Forests; but the immense grassy plains of reservations within the Dakotas and Montana are quite different from any extensive areas within National Forests. The capacity of these short grass areas of the Plains Region to produce forage for stock is truly marvelous.

While there are Indian reservations under Federal jurisdiction in twenty states, the chief reservations containing grazing lands of importance lie within ten states: Arizona, Idaho, Montana, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. The combined area of the reservations in these states exceeds 45,000,000 acres and of this total nearly 40,000,000 acres are classifiable as grazing lands. These 40,000,000 acres include about 5,000,000 acres of forest land which affords range incidental to its primary purpose of forest production.

The reservations in these ten states may be properly assigned to three groups of rather distinct characteristics. These are the Northern Great Plains Region, lying east of the Rockies and north of the forty-first parallel of latitude; the Intermountain Region, lying north of the forty-first parallel and between the Rockies and the Cascades; and the Southwest Region comprising Arizona, New Mexico, Utah, and a small area in southwestern Colorado. The Plains Region contains over 12,000,000 acres of range lands, the Intermountain Region nearly 5,000,000 acres, and the Southwestern Region nearly 23,000,000 acres. In 1930 slightly more than 11,000,000 acres were under lease or permit for grazing purposes and a yearly cash income of nearly \$900,000 was realized. It will be noted that

the area not under lease or permit was nearly three times the area from which a cash revenue was being received. The total revenue derived from Indian livestock ranging on Indian lands in 1930 was nearly \$2,340,000. Thus the total income to the Indians from livestock and grazing fees amounted to approximately \$3,250,000. Obviously these range resources play an important part in the economic life of the Indians.

CONDITION OF GRAZING LANDS.

While it is unmistakably true that the grazing lands of the Navajos in Arizona and New Mexico are greatly overstocked at present, and while isolated instances of overgrazing occur on various reservations, the range lands on Indian reservations are not generally in a depleted condition. In fact, throughout the Indian country the faults of the past have been chiefly in the line of unregulated use and a failure to provide physical improvements rather than in a general overstocking of the ranges. Ranges heretofore overgrazed could be relieved through the development of water in areas that can not now be used to capacity because of a lack of wells or tanks. Large areas have been injured by the grazing of inferior horses who produce no income commensurate with the harm done to the range. Tens of thousands of acres are practically useless for stock purposes and hundreds of thousands of acres are greatly reduced in value because of their occupation by prairie dogs which could be and should be exterminated.

Funds have never been available for the development of water supplies and the prospects of future appropriations for such purposes are by no means encouraging. The Indians have been reluctant to dispose of their ponies at the prices that could be obtained for them; and not only have the funds available for rodent control been extremely limited, but the Indians, especially in the Navajo country, have not been sympathetic with plans for the extermination of animals that at times afford a partial food supply in a region that produces but a limited variety of human diet.

INVENTORY OF GRAZING LANDS

The first task undertaken by the Forestry Branch of the Indian Service after the administration of grazing on Indian lands was assigned to it on April 15, 1930 was to secure an inventory of the grazing resources of the Indians and of the stock utilizing the same. Incidental to the taking of this inventory a vast amount of information was accumulated as to the precipitation, the kinds of forage, past experience in stock raising, and other data for each particular reservation. This infor-

mation was incorporated in extensive reports of as uniform a character as the circumstances would permit. These special reports were supplemented by, and to some extent summarized in, a general report on the entire problem entitled "An Economic Survey of the Range Resources and Grazing Activities on Indian Reservations" prepared by Mr. Lee Muck, Assistant Director of Forestry in the Indian Service, assisted by Mr. P. E. Melis, Assistant Forester, and Mr. G. M. Nyce, Associate Range Supervisor. This report was published in Part 22 of Senate Hearings under Senate Resolution 79 of the Seventieth Congress. On June 4, 1931 the Department of the Interior approved the regulations, permit forms, etc., that had been devised in the light of the studies conducted during the year following April 15, 1930. The new regulations, stipulations as to use of range, permit forms, and so forth, went into effect on July 1, 1931.

An inventory of the grazing resources having been made, the main weaknesses of the former method of administration disclosed, and a plan outlined for future administration, attention was directed to special studies of particular ranges on the various reservations and to the accumulation in definite, recorded form of data that could be compared with other data gathered at subsequent periods so as to disclose unmistakably the trends toward improvement or depletion of the range on such particular areas. Obviously, studies of this character require great care and much time and it is not surprising that the accomplishments along this line during the first two years have been comparatively limited, when it is remembered that the current administration connected with the actual use of 40,000,000 acres has necessarily demanded a very large part of the time of the very restricted force available. For instance there are several reservations comprising more than 1,000,000 acres on which only one man is available for grazing work and while some guidance can be given by foresters and grazing specialists at large, it is clearly impossible with such a limited personnel to devote adequate time to studies of the most vital importance to the establishment of successful range management.

ADMINISTRATION CHANGE AT WRONG TIME

Unfortunately the efforts to introduce new methods of grazing administration on Indian lands happened to coincide with a period of the most adverse conditions in the livestock industry that have been experienced in forty years, and possibly during the whole history of the industry in America. The summers of 1929 and 1930 were marked by extreme drought in different portions of the Northwest and Southwest, and so little precipitation occurred within extensive areas in Washington, Montana and the Dakotas in 1931 as to force the removal from their usual ranges of tens of

thousands of head of stock in the late summer and autumn of that year. The general economic depression having its incidence late in 1929 had begun to be seriously felt in the livestock industry in 1930. The low prices of stock combined with the shortage of forage and even cultivated crops in the range states, placed the owners of livestock in a most precarious condition. Economic conditions became successively worse in 1931 and 1932 until the prices obtainable for steers, lambs and wool dropped to one-half or one-third of the realizations of 1928. The inability of the Navajos and other tribes in the Southwest to dispose of their lambs and older sheep, greatly accentuated an over-stocking of ranges that already threatened future income from their grazing lands. The disastrously low prices for livestock products prevented permittees on the Indian ranges from paying their grazing fees established on a basis of comparatively high markets for products. An urgent demand came from the stockmen that grazing rates be substantially reduced even on contracts already made for a term of years.

The Indian Service was not in a position to reduce grazing fees in existing contracts without the consent of the Indians and was unwilling to agree to reductions on future permits without the consent of the Indians. For a long time the Indians on many reservations opposed any reduction, but as they became convinced that the permittees were really unable to pay the former prices and came to realize that the ranges might lie idle if rates were not reduced, agreements on adjustments were reached and it affords us much satisfaction to state that generally the Indians showed a very commendable spirit in meeting the users of the range half way in a reduction of grazing fees.

PROBLEMS OF ADMINISTRATION

The Indian Service is confronted by a peculiarly difficult problem in the administration of grazing lands as well as timber lands. In 1887 legislation was passed by the federal Congress that was directed to the individualization of the Indian problem. The theory back of this legislation was that if each Indian were given an allotment of land in severalty the tribal status and customs would in a comparatively short time be broken up and the individual Indians with their distinct land holdings would assume much the same position as homesteaders on the public lands. Under this general allotment act and special acts of a similar character the greater part of the grazing land on reservations in North and South Dakota, Idaho, Montana, and to a lesser degree in other states, has been allotted in areas varying from 160 acres to 320 acres, or even a larger amount in one or two instances.

BIG GAME MANAGEMENT

ORANGE A. OLSEN

Inspector of Grazing, U. S. Forest Service, Region 4

GAME management and game conservation are synonymous, meaning one and the same thing; that is, both involve propagation, protection, and a wise utilization of the surplus. Game managers endeavor to get away from guess work and to build on facts and make common sense application of scientific knowledge.

The game manager, when confronted with a problem of management, soon finds that it is extremely ramifying and frequently complex. He does not only have to deal with the habits and needs of the particular game animal involved, but also has to consider its relation to man. Civilization has pushed out into the most remote sections of our game country and a correlation of land use by man and game must be worked out. Use by man means his utilization of land resources—*forage, timber, watershed, agriculture, and recreation.* Definite information concerning the animal to be conserved is important; its life history should be well understood; also, at least, its approximate numbers, rate of increase and losses should be known. Information is needed on diseases and the effects of parasites internally and externally. What game animals eat and the amount are also valuable data is correlating range use by them with that of livestock.

It is evident that those charged with the responsibility of managing game resources should have broad training, both technical and practical, in many of the sciences. The better they are versed in biology, ecology, forestry, range management, livestock, agriculture, economics, and so forth, the better qualified they will be to handle game problems. Training and experience are essential to see the broad picture of how game conservation should fit in with our whole economic structure. Correlating land use by game with that of forage supply, livestock, recreation, private lands, and the public is a big undertaking.

EARLY CONSERVATION

The value of wild life and the need for its proper conservation are being realized and appreciated more and more as the years pass. Never before has the interest been greater and this interest is growing. More thought, time and money are being devoted to the propagation, protection, and utilization of wild life than ever before.

The early trappers, explorers, and settlers who came West found an abundance of game on lands wherever conditions were favorable. The buffalo and antelope numbered thousands on the plains; deer and elk were abundant in the foothills, valleys, and some mountainous regions; mountain sheep, goats and moose occupied ranges in reasonable numbers where the environment was to their liking.

That which is plentiful is seldom appreciated. Game exploitation resulted. In a few short years the buffalo became strangers to the plains and the antelope were seldom seen. Deer and elk in reduced numbers were crowded into the back country. Not much is recorded about the mountain sheep, goat and moose, but undoubtedly civilization adversely affected their numbers.

The numbers of game animals decreased rapidly and in many instances disappeared entirely. To save them from extinction, State Fish and Game Departments were created; laws were enacted to restrict the kill. Game preserves were established and serious effort was made to save the remnants. Public sentiment was generally favorable to big game. Elk plantings were made to restock depleted areas. Control of predatory animals was undertaken by the States, Federal Government, stockmen, and sportsmen. In many places throughout the intermountain region several species of our big game in response to this protection, have made a very pleasing "come back," especially during the past ten years. On the National Forests of the West, elk, deer, and antelope have shown excellent recovery. Mountain sheep and goats seem to be gradually decreasing, while moose are making normal increases in some sections.

GAME MANAGEMENT ESSENTIAL

This protection, admirable as it has been and is, has in some few instances not worked to the best advantage, even to the game themselves. In a few places, big game, especially deer, elk, and to a lesser extent antelope, have increased to such density that they have either of themselves or in conjunction with livestock, so depleted their ranges that heavy losses in game have resulted, particularly on winter ranges which are usually limited in area and grazing capacity. On some units game have become so abundant that stockmen complain against the numbers of deer and elk and maintain they are being crowded out. Game frequently trespass in excessive numbers on private lands, consuming forage to which the land owner is entitled. Occasionally game animals do considerable damage to farm crops, orchards, and gardens.

Evidently such conditions are not to the best interests of game. It is poor management that permits game to increase beyond its food supply causing losses from starvation and inviting parasites and disease. Those who have seen dead elk and deer scattered over depleted ranges, due to starvation, are indelibly impressed that too much protection can reach a stage where it is worse than not enough. It is difficult to reestablish game on a depleted range. Management based on the year-long

grazing capacity of the available range, plus supplemental feed if provided, should be practiced. It is inhuman to raise game in the summer and let it suffer the agonies of starvation in winter. Where there is conflict between game and livestock on National Forest lands, a balance between the interests of both should be worked out. Game and livestock are both valuable resources and one must not unnecessarily crowd out the other. The problem of game on private lands is difficult to solve. Fortunately most land owners are friendly toward game and gladly tolerate game in reasonable numbers and complain only when it becomes burdensome. Lands which are the "key" to a particular game problem should be publicly owned and administered primarily for the benefit of game. This applies chiefly to game winter ranges; summer ranges are usually adequate.

CHANGES NEEDED IN GAME LAWS

The conditions surrounding each game herd vary, with no two herds having the same problems to meet. This brings out the need for flexibility in game laws to permit the handling of any game herd as a unit, separate and apart from other herds, in accordance with its particular conditions and needs. Big game conservation has a wider field than mere law enforcement and most of the states have now enacted laws giving to some one, either the Fish and Game Commissioner, a Game Commission, or a Board, authority to regulate

hunting seasons, limit the kill as to numbers and sex for the purpose of controlling numbers where necessary to prevent range depletion and damage to private property and to use wisely any surplus of game that may exist.

The first duty of every game administrator is to produce the maximum amount of game consistent with the forage supply and economic needs of the people. The ideal would be to remove only the surplus game animals. A surplus may be considered as existing when numbers exceed the year-long forage supply (natural or artificial), when control is necessary to safeguard against undue damage to private property, when the density of game is out of balance with numbers of livestock, and when there is a greater ratio of males to females than is necessary to maintain a proper breeding herd.

The application of management principles will provide for producing and maintaining the greatest number of game animals possible on any given area and will also give the sportsmen maximum hunting privileges consistent with the welfare of the individual game herds. On some areas less hunting would be necessary, while on others it would be increased. Ultimately with wise management, the optimum of numbers would be reached and under a system of regulated hunting the perpetuation of game would be assured and the needs of the sportsmen, recreationists, and big game lovers would be provided for to the highest degree possible.

THE NEW PUBLIC DOMAIN

MUCH has been said in recent years about the public domain remnant of the original public land wealth of the United States, comprising the culled over leavings after the more desirable lands had been privately acquired. Its final disposition is a problem of great magnitude. But there is a new and somewhat similar problem that is of growing importance. Forest land from which the original timber crop has been removed is gradually going through the stages of tax delinquency until, as county land, it becomes a new public domain—a new "no man's land"—since the counties are doing no more with it than has the government undertaken hitherto with the old public domain. There are some distinct differences. The old public domain is constant in size or, if anything, slowly diminishing. The new public domain is growing very rapidly. The old public domain is the poorer land; the new public domain was originally the best of the timber producing lands.

M. H. WOLFF.

THE PLACE OF CHEMICAL RESEARCH IN FORESTRY

E. C. JAHN

Associate Professor of Forestry

THE proper utilization of the products of the forest is just as important a part of the science of forestry as is the growing of timber. Forest utilization has concerned itself primarily with lumber and timbers which, both in quantity, as represented by board feet of wood consumed, and in value, are our most important forest products. These products possess in general the properties of the original wood in the tree and, because of these properties, such as strength, lightness, elas-

static complex structure is still the subject of intensive investigation.

WOOD OFFERS MUCH STUDY

Neither botanically nor chemically is wood a homogeneous substance. Botanically it is made up of a variety of cells, most of which are spindle-shaped fibers about 1 mm. long in hardwoods and 1.5 to 9 mm. long in conifers or softwoods. Communication exists between most of the cells in wood by means of pits in



The Wood Conversion Laboratory is a Valuable Addition to the Idaho School of Forestry.

ticity, and workability, they are particularly useful for structural purposes.

There are, however, many very important and valuable forest products which no longer resemble the wood from which they were obtained. The wood is the raw material for these products which are manufactured principally by chemical processes. Wood as a raw material is becoming increasingly important as a basis for chemical and technological processes which furnish man with many useful articles.

First let us briefly consider the raw material—wood. Wood is organic tissue produced by biochemical and physiological processes and is, therefore, a complex substance. A knowledge of the chemistry of wood is fundamental to its utilization by any of the chemical processes. Of the mechanism of the growth and synthesis of the various components of wood we know practically nothing. Our knowledge of wood is only of the product as has been elaborated by the plant, and yet this

their walls. The cells are all cemented to one another by a common medial layer known as the middle lamella. This cementing layer or matrix is made up of a complex material not clearly defined, and known as lignin. The cell walls are composed mostly of a strong tough substance, cellulose, together with hemicelluloses and some lignin. The cell wall encloses a lumen or central cavity which contains extraneous material, since these cavities function in the storage of food, the transportation of food and water, and in other life processes.

The scope of this paper does not permit discussion of the chemistry of these major components of wood. Although the chemistry of wood still offers many baffling problems, the gradual unfolding of these mysteries adds to human knowledge and in turn to the increased usefulness of wood to man.

There are several important chemical industries which depend upon the forest for their raw material and yet do not utilize wood. For

example, in the production of naval stores (turpentine, pine oil, rosin), maple syrup, rubber, tung oil, and many other products the woody structure of the tree is not utilized, but materials which are naturally produced by the tree and only require collection are used. Only those industries which utilize the woody structure will be considered here.

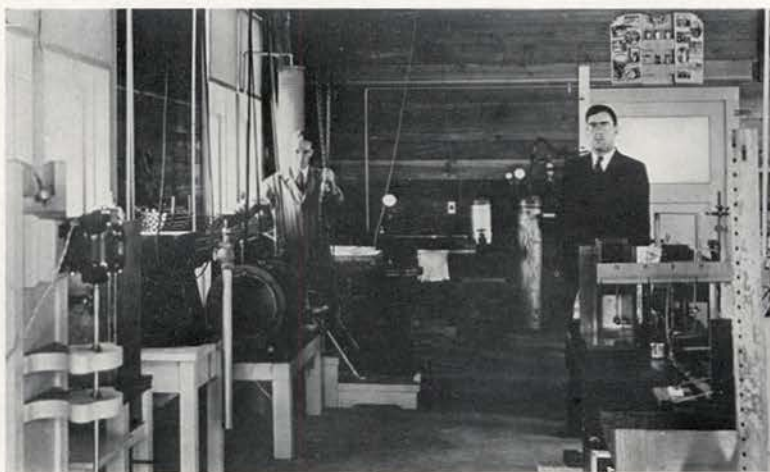
CHARCOAL INDUSTRY CENTURIES OLD

Although most chemical industries depending upon wood as raw material are of recent development, there are some which originated several centuries or more ago. The most notable example is the destructive distillation of wood. However, the modern wood distillation industry is a far cry from the charcoal making of five centuries ago. The old collier

duction of acetic acid, acetone and wood alcohol.

The pulp and paper industry is the greatest of the chemical forest industries and is the seventh ranking industry in the United States. Paper was invented by the Chinese in 105 A. D. and was made by hand from that time until after the middle of the past century. With the advent of the chemical processes for producing pulp from wood, the paper industry passed, in a relatively short time, from making a few hundred hand sheets per day to mills producing 400 tons of paper for the same period of time.

Paper is a thin sheet of plant fibers made by separating the individual fibers in the plant and then felting them together again in a uniform sheet. Since wood is composed mainly



The Wood Conversion Laboratory Contains Considerable Modern Equipment and Machinery for Instructional Purposes.

obtained only charcoal from wood and thereby unwittingly burned and wasted the most valuable products. At present, thanks to research, chemicals which were formerly lost in gases and smoke are now the most important products of wood distillation. The more important chemical products are acetic acid, wood alcohol, acetone and tar oils which find wide industrial uses as solvents, for the manufacture of one form of rayon, in preparing formaldehyde, synthetic resins, various drugs, dyes, perfumes, and other valuable products.

The wood distillation industry is constantly undergoing radical development and improvement in economy of manufacture, in yield of products, in the refinement of products and the recovery of by-products. In the more recent plants sawdust and chipped waste wood may be fed continuously to the distillation retorts, effecting both economy and improved production. The refinement of the products is carried out in complex modern chemical engineering equipment. It is believed that with these improvements the industry will be able to compete successfully with the synthetic pro-

duction of fiber-shaped cells it is an excellent raw material for paper. But in order to separate these cellulose fibers the cementing substance, lignin, must be removed. The gradual accumulation of research on wood during the nineteenth century led to the discovery of the present-day pulping process in which the lignin is dissolved from the wood, thereby freeing the fibers.

WOOD A RAW MATERIAL FOR TEXTILES

As in other modern industries, research is constantly bringing about improvements. The actual pulping processes are still but imperfectly known and are the center of very intensive research. The number of forest species which may be used for pulp is gradually being enlarged. Also improved pulping processes and the development of pulp refining methods is broadening the market for pulp. Highly purified wood pulp is competing to a greater extent with cotton as a raw material for rayon and other cellulose products.

A new industry which is related to the pulp and paper industry is the manufacture of fiber

(Continued on page 49)

PLANNING A FOREST FOR THE UNIVERSITY OF IDAHO

E. A. SHERMAN

United States Forest Service

WHEN Dean F. G. Miller, of the School of Forestry of the University of Idaho, turns from his desk and looks out of his office window, his eyes rest on the timbered south slopes of a range of hills known as the Moscow Mountains. These constitute a short secondary range running east and west almost at a right angle to and fairly well detached from the main mountain mass occupying the central and northern parts of the State. The most striking feature of the range, Moscow Mountain proper, is only 12 miles in an air line from the dean's office. The area is unusually productive, with a fertility carried to it in wind-borne soils from the famous Palouse region. The total area comprises 65,753.62 acres and is divided naturally into two rather distinct units, the Moscow Mountain unit, containing 35,410.79 acres, and the Potato Hill unit of 30,342.83 acres. All the principal commercial forest types are well represented, with acreages as follows: white pine, 14,080; ponderosa pine, 20,000; larch-fir, 28,710; Douglas fir, 1,390; cedar—white fir, 700. It would be hard, the dean believes, to find a more nearly ideal set-up for a university forest.

To obtain this area for the Idaho School of Forestry as a field laboratory to be studied, protected, developed, and managed by his students has long been the dream of Dean Miller. Two steps toward the accomplishment of that ambition have recently been taken. In 1932 the Forest Development Company donated to the University about three thousand, six hundred and fifty acres of forest land on Moscow Mountain. This area is already in use by the forest school and forms a nucleus for the projected forest. The second step was taken on January 13, 1933, when Representative Burton L. French, of Idaho, introduced in Congress a bill which, if enacted into law, will

enable the State to acquire for its university the entire forest area in question.

The plan which passage of the bill will further is based upon the fact that the State of Idaho owns large acreages of land within the boundaries of the national forests in the State. The bill authorizes the Federal Government to acquire privately owned lands within certain described sections in the Moscow Mountains region and extending north-eastward of that region to the Palouse division of the St. Joe National Forest and southward to Potato Hill (a landmark of some local prominence). Boundary lines are to be so drawn as to exclude farm lands and settlements and all land having substantial agricultural potentialities. The Federal Government would acquire these lands with the ultimate object of exchanging them for an equal value of the lands owned by the State within the boundaries of national forests.

It may take many years to round out the entire project, as a great many small ownerships are involved. Meanwhile, the State and the Federal Government already own a part of the land. In addition to the tract donated to the University, the State owns 8,029 acres within the boundary limits of the two units, and the Federal Government before long will come into ownership of about 9,000 acres, 200 from the public domain and the balance from pending donations, making combined State and Federal holdings of approximately 20,000 acres.

The terms of the final exchange transaction between the State and the Forest Service will be worked out after the Federal Government has completed the work of consolidation and the State authorities have been empowered to make such an exchange.—*Forest Worker*, March, 1933.

Income From Recreational Sources

New England's annual income from recreational sources amounts to \$500,000,000 and, if this is considered as a 6 per cent return on a capital investment, it would place the current economic value of New England's recreational assets at about 8½ billion dollars. The value of the recreational property in New England is placed at \$550,000,000 and taxes amounting to \$15,000,000 are paid on this property. The recreation dollar is spent as follows: Transportation, 20 cents; accommodations, 20 cents; retail stores, 25 cents; food, 21 cents; amusements, 8 cents; confections, 6 cents.—*Journal of Forestry*, March, 1933.

Wood Stood

Philip Lord, '33, completed his academic work the first semester this year and returned to his home in South Pasadena, California, just in time for the earthquake. He writes as follows:

"Practically all the serious damage occurred to brick buildings. I have been over a large part of the damaged area and in no case did I see any major damage to an all-wood structure. Some of the wooden buildings were moved several feet from their foundations by the shock yet they did not fall. The lumber companies are advertising with the phrase, 'Wood Stood.' Lumber will have no trouble holding its own as a building material in this section of the country."

GIFT OF EXPERIMENTAL FOREST

F. G. MILLER

Dean, School of Forestry, University of Idaho

BY OUTRIGHT gift the University of Idaho has come into possession of a choice experimental forest for its School of Forestry. The gift was made by the Forest Development Company, a Weyerhaeuser subsidiary at Lewiston, Idaho. It consists of 3,646 acres of forest land, and it was accepted by the State Board of Education October 11, 1932.

In conveying this gift to the University of Idaho Mr. C. L. Billings, President of the Forest Development Company, stated it to be the thought of the company that the area shall be used as "an experimental forest as long as there is a School of Forestry at the University." Mr. Billings has also furnished the School a full and complete report, with maps, descriptive of the forest cover on these lands, which will serve the School as a basis in formulating its plan of management for the area.

LOCATION AND ACCESSIBILITY

These lands are suitably and conveniently located for an experimental forest. They are all within the Moscow Mountain Range, 3,046 acres lying on the north slope and 600 acres on the south slope. Their average distance from Moscow is about 18 miles northeast. The lands on the north slope may be reached direct over a graveled and dirt road known as the "Old Princeton Road," or by way of Potlatch over a graveled highway to Potlatch, thence over a dirt road the rest of the way. The 600 acres on the south slope are accessible over a dirt and graveled road by way of Troy. It probably will not be many years until the main body of the area, that on the north slope of the mountains, will be accessible all the way over a surfaced road.

TOPOGRAPHY AND SOIL

The land is all either rolling or mountainous in character, but any of it can be readily logged. It is practically all good timber producing soil. The forest on the south slope is drained by a beautiful mountain stream which traverses its full length. That on the north slope of the mountains is fairly well watered by streams, the principal one being Hatter Creek.

FOREST COVER

The principal species found on the area are ponderosa pine, western white pine, tamarack, Douglas fir, white fir, western red cedar, and lodgepole pine. These species grow largely in mixed stands. All age classes of all species of timber common to the northern part of Idaho are found within this forest. Practically all of the merchantable timber has been removed, but the timber was cut in such a way as to leave intact on most of the area the trees below merchantable size.

The report of the Forest Development Company shows that 2,180 acres or nearly 60 per cent of the area is now covered with from 14 to 53 trees per acre of pole size, that is to say, trees 8 inches or over in diameter breast high. There are, of course, some younger trees below this size, which were not counted when the cruise was made. This means that there is left standing a sufficient number of trees to restock the area by natural regeneration. In fact some reproduction has already started.

About 500 acres or 14 per cent of the area bears young trees of the sapling stage—trees from 3 to 6 inches in diameter breast high, while 180 acres or 5 per cent is partially stocked with seedlings varying in size from 6 inches in height to 2 inches in diameter breast high. Nearly 14 per cent has been burned over and 7 per cent is classed as open land. Very probably the 79 per cent of the area now bearing poles, saplings, or seedlings will restock itself. The other 21 per cent may have to be planted, though it is possible that some of this will eventually reproduce by natural means.

ACQUISITION OF ADJACENT LANDS

The gift of this fine forest property came at an opportune time as it is opening the way to the acquisition of a larger School Forest as described by Dr. E. A. Sherman in an article under the caption: "Planning a Forest for the University of Idaho," on page 17.

Besides serving as a field laboratory for the training of students in forestry and experimentation in methods of silvicultural management, this enlarged School Forest would be highly useful as a game preserve and for recreational uses, not to mention its potential value for the production of timber. It may be added that the School is already realizing some revenue from the gift area from the sale of cordwood and grazing privileges. Due acknowledgment is here made to the Forest Development Company for this timely and important donation. It will be known as the Moscow Mountain Experimental Forest.

RESPIRE

STANLEY FOSS BARTLETT

*Let me turn away for a moment
From the ways that are blazed to goals,
Let me wander gypsy-minded
While I rest from my worldly rôles.*

*Let me go where there is no commerce,
Thought-free from my friend and foe,
For I've peace to make with my soul and God
And I've dreams of my own to know.*

BRANDED A "BILER"

STANLEY FOSS BARTLETT*

THERE are some trades and businesses that a man can bluff about, but cooking in a logging camp is not among these gilt-edged careers. In preparing meals on a large scale for a big crew of hard working, hungry woodsmen, alibis and hot air should be omitted from the menu; for results of the simple old square sort are what the boys expect when a hundred of them face the festal board thrice daily. And once a cook fails to produce nourishment fit for "King Spruce" he is branded forever, a "biler" (boiler), the cussedest culinary term known north of the "bright lights."

For the reason foregoing, some of the keenest rivalry in the world exists among woods cooks. From the plentiful, but plain, raw materials which are furnished them, ambitious cooks have succeeded in producing about everything from ice cream to Hungarian goulash; and if one doesn't mind "taking it off tin" a mighty good meal is to be had in the cook-room of a Maine woods camp.

I know one cook who is famous for his pink-frosted cakes, (the extract of this delicate hue he squeezes from ordinary beets); another one carries in his "war-bag," as a part of his regular equipment, several fancy shaped cookie cutters, and a plate of his cookies would fittingly and properly grace a five-year-old's party table. Then there are tricks of the trade which are guarded secrets such as: a grated raw potato can be successfully used in place of an egg in mixing up doughnuts.

So rivalry runs high in the big woods kitchen, and it reached the high-water mark a few years ago when a lemon pie craze swept over the camp cuisine of the northland. Where or how this epidemic started is an unknown and unimportant fact. But reports of luscious lemon pies here and there spread from camp to camp and for a time a cook was rated by the lemon pie he could make.

At one camp, where the crew was building a big dam on a Penobscot tributary, the cook-room was governed by an old-time cook of irreproachable reputation. Heretofore, lemon pies had not been on his bill of fare, but, not to be outdone, he ordered a pail of lemon-pie filling.

In due time a full wooden pie-filling bucket was deposited in the "dingle" (pantry). The cookee removed the cover and the famous cook proceeded to construct a batch of such pies as had never been tasted this side of the Ritz. He was late with his work and the pies were hot out of the oven when the cookee yodelled

the dinner call. The crew of half-famished men pushed into the cook-room and fell hastily upon the well-prepared bread and meat. Meanwhile the cookee placed the hot pies on the long tables at regular intervals within easy reach of all. For the chief of chefs had at last tried his hand at the popular pastry and the men would be anxious to brag about the lemon pie THEIR cook had made.

Several of the crew, having partaken their fill of the plain food, reached for the lemon pie, took large wedges of it into their plates and lost no time in conveying generous cuts to their mouth. Woodsmen being undemonstrative fellows of impassive expression, no hint as to the reception of the pies caught the cook's beaming paternal eye until "Jim" Malone, the boss, who had appropriated a half of one pie for himself, closed his teeth on the first mouthful. He started to swallow but choked and coughed; his eyes rolled and a series of light effects and grotesque grimaces passed over his leathery face.

Then, emitting thick curses of the seven black ganders of China on some one, he turned a mean eye toward the cook—the cook had gone white and the men at the tables were silent. At last the boss's tight lips opened slowly—he spoke—"Biler, what is them pies made of?" The cook, for lack of a better move, produced the nearly empty pie-filling pail and as he held it his eye noted a blue-penciled inscription, made by the storehouse clerk on the cover, and he read aloud:

"This pail contains petroleum grease for use on the dam-gate runways." The whiteness of his face turned to a gray pallor—the crew muttered fiercely in chorus—the boss was first to recover and again he spoke loudly and certainly, "Feedin' vaseline pies to a man—and built of the gate-grease I been looking for all the mornin'!"

Somebody cussed and someone laughed and the cook, who had been struck motionless said, anxiously in a trembling voice, "Do you reckon it'll kill any of yus?" The boss replied for the body, "Biler, we don't know that yet, but vaseline pie is a durned poor diet for a married man with three children and no insurance—but nobody here's any nearer death this minute than you be and if I wuz you I'd evacuate mighty sudden."

The crew arose and sauntered toward the men's camp with mixed emotions as the once-famous cook, now branded for life, packed his "Kennebunker" and left for parts unknown.

A SKIN GAME

In looking over a silver fox farm an inquisitive lady asked "How many times can a fox be skinned for its fur?"

*Editor's Note: Mr. Bartlett attended the School of Forestry Ranger Course in 1921-22 and now is Assistant Editor of the Lewiston (Maine) *Sun-Journal*, writing feature forestry articles. He has been an active contributor to *The Idaho Forester* and the editorial staff is grateful for his assistance.

EXTENSION FORESTRY IN IDAHO

STANLEY C. CLARKE

Extension Forester

THE word, "extension," may be defined as extending information and instruction beyond the walls of a college. Certain agricultural colleges were doing some forestry extension work as early as 1912. Between 1912 and 1925, when the Clarke-McNary law became effective, 14 states developed definite farm forestry projects. At the present time, 33 states, and Porto Rico and Hawaii have extension foresters. The potentialities of this organization are quite apparent when one realizes that more than 3,000 county agents become the messengers of the extension foresters to hundreds of thousands of farmers within their counties. Furthermore, practically all of the co-operating states have also taken advantage of the provision in the Clarke-McNary law to operate co-operative tree nurseries and to produce forest seedlings and transplants at a low cost to the farmers within their respective boundaries. Delaware, Florida, Oklahoma, Kentucky, Missouri, Kansas, Colorado, Washington, and Oregon do not employ extension foresters, but they do co-operate with the federal government in growing farm forest planting stock for farmlands. In 1928, the distribution of forest planting stock for farmlands by co-operating states amounted to 28,757,000 seedlings and transplants. The states of New York and Pennsylvania distributed more than 18,000,000 of this total. West of the Rocky Mountains, Idaho held first place in distribution of 183,000 trees, of which 150,000 were black locust.

THE BEGINNING OF EXTENSION FORESTRY IN IDAHO

Mr. Arthur M. Sowder, now Assistant Professor of Forestry at the University of Idaho, was appointed Extension Forester for Idaho on April 16, 1927. Extension forestry was continued for the first two years on a half-time basis in conjunction with farm forestry experimental research work under a co-operative arrangement between the Idaho Agricultural Experiment Station and the School of Forestry. This latter phase of the program of work was necessary so that more fundamental data might be had to further the extension program in the state. Every Idahoan knows that his state has a great variation in soil and climate. It probably is not common knowledge that some Idaho farmers retain the idea that all trees planted in close proximity to their crops are detrimental to crop yield. One of the major problems of research was a study to determine the influence of windbreaks on the growth and yield of farm and orchard crops. Two other studies, which have also been of value to the extension forester, were determi-

nations of the adaptability of certain species to alkali soils, and high-altitude plantings.

The early extension work consisted in making contacts with the county agents and of selling the idea of farm forestry to these important key-men who in turn were to interest the farmers in this phase of agriculture. The adaptability of species to different counties and communities was also noted by the condition of trees already planted. For many years prior to the passing of the Clarke-McNary law, Idaho had a state nursery in operation at Moscow, and was supplying seedlings and transplants to farmers for windbreak and woodlot purposes, so it was possible at this later date to gather considerable data.

A program of education was started through the use of newspaper articles, the "Idaho Agricultural News Letter," the "Idaho Farm Forestry News Letter," through talks and discussions at farm meetings, and occasional radio programs.

LATER EXTENSION WORK

After the extension forester has convinced each county agricultural agent that forestry can contribute materially to the agricultural prosperity of his county and after the county agent becomes a supporter of the work, the extension forester can feel assured that forestry will find a place on the agricultural program of the county. When this point is reached, the county agent begins calling for help, instead of the forester having to plead for a hearing. This takes time, but it is the beginning of progress. After this condition has been brought about, it is possible to work up the different projects, such as woodland improvement and management, the preservation of fence posts and other farm timber, the planting of windbreaks and shelterbelts, the planting of woodlots on areas unsuited for annual crop production, the control of erosion and fixation of sand dunes and further educational work through the 4-H Club program.

FARM FORESTRY TREE PLANTING

Through the practice of farm forestry, the marginal areas of the farm may often be brought into use to supply the wood needs, such as posts, poles, fuel, and general repair material. Southern Idaho, being naturally an unforested area, gives one the impression that trees may not do well there, but farmers are becoming more familiar with the better tree species, and are also becoming aware of the fact that trees will grow with the same amount of soil moisture that other agricultural crops require. In our irrigated sections, where the altitude is below 4,000 feet, black locusts have

been and are still being planted in large quantities because of their rapid growth to fence-post size in 6 to 10 years' time.

Windbreak, shelterbelt and woodlot plantings are being made at the rate of 250 to 300 plantings per year. All plantings, where the trees are obtained from the state nursery, are termed co-operative plantings. Advice in the preparation of the site, selection of species, method of planting, cultivation and protection as well as the actual inspection of the proposed planting site and assistance in planting, if desired, is given to the farmers of the state without charge. The extension forester does not act as a salesman for the state nursery, but it is to the interest of the state and farmers that the farmers receive the information that Idaho, in co-operation with the federal government, produces seedlings at a minimum cost

WOODLAND IMPROVEMENT

The word "woodland" is used here to signify a larger wooded tract than the word "woodlot" implies.

Idaho has about 800,000 acres of woodland, mostly in the northern part of the state, which are practically all owned by farmers. In many areas, these woodlands are gradually being "clear-cut" to be replaced by other agricultural crops. Most of the farms in northern Idaho are the result of land clearing, and on any farm the poorest soils are the last to be cut over. Hence, today, it is thought that there is a distinct need to demonstrate how these remaining timbered stands might become more productive to the farmer through a proper system of management.

The United States census report for 1929 gives 5,806 farms in Idaho reporting a total



Livestock Seek the Protection the Woodlot Affords.

for farm forestry plantings. Special demonstration plantings have been established adjacent to certain main highways to attract attention to the possibilities of growing trees on the farms.

The practice of farm forestry may be beneficial to the farmers of Idaho in some of the following ways:

1. Protection to man, farmstead and stock from the elements.
2. Protection to other crops from summer drought and excessive evaporation.
3. Provision of fuelwood, fence posts, poles, props, lumber and other forest products.
4. Furnish winter employment to the farm help.
5. Increasing the net income by utilization of areas unsuitable for field crops.
6. Add to the sale and aesthetic value of the farm.

Co-operation with the farmer does not cease with the purchase and planting of trees. These co-operative projects are tabulated and inspected from time to time.

value of \$938,979.00 for farm forest products disposed of. More than 50,000 cords annually are being cut in northern Idaho for the paper-pulp industries alone. Other products are fuelwood, ties, poles and piling, fence posts, some lumber and veneer material.

Farmers in the vicinity of Troy, who lost their woodlots by fire last year, admit that they will miss the cash income from these areas that required so little care.

With the idea of aiding the woodland owners in making their woodlands more productive and at the same time less subject to fire danger, five woodland improvement projects in northern Idaho have been carried to completion. They are located along main traveled farm highways in order to command the greatest amount of attention from farm traffic. The woodland improvement area is divided into two plots, each of a size varying from one-half to about one acre. One plot was left in its natural condition as a contrast, and the other is kept properly thinned and pruned.

(Continued on page 51)

VICE PRESIDENT PLANTS SPRUCE ON CAMPUS

HONORABLE CHARLES C. CURTIS, as vice president of the United States, added to the University's circle of trees planted by distinguished citizens when, on Wednesday, October 12, 1932, he planted an Engelmann spruce on the campus. The planting site is conspicuously located directly in front of the Administration Building, and the Engelmann spruce, a species native to Idaho, is a valuable addition to the landscape of the campus. Vice President Curtis was visiting northern Idaho on his trip through western United States and was able to adjust his schedule to visit the University of Idaho. During the tree planting ceremonies he was accompanied by Mr. E. T. Whitla of Coeur d'Alene, Idaho.

Other trees officially established by citizens of note are the "Roosevelt Tree," a Colorado Blue Spruce, planted by Theodore Roosevelt April 10, 1911; the "Taft Tree," a Port Orford Cedar, commemorating the visit October 4, 1911 of William Howard Taft to the campus; and the "Marshall Tree," a red oak, planted November 17, 1917, by the then Vice President of the United States, Thomas R. Marshall. Two additional trees enjoying the environment of the foregoing mentioned trees are a George Washington Memorial Elm planted by the University of Idaho Faculty Women's Club on November 17, 1931, and a concolor fir, also

planted as a George Washington Memorial by Paradise Lodge No. 17, A. F. & A. M., Moscow, Idaho, on April 10, 1931.



Honorable Charles C. Curtis

LEARN FROM THE TREES

When you stop to think about trees, all that they withstand, all the beauty that they shed, all the good that they do and comfort that they give—do you wonder that people love them?

If human beings possessed many of the characteristics of a tree, what wonderful folks they would be. The tree pushes its root deep and firm in the soil. How many folks need to do the same, need to have their convictions, their opinions deeply imbedded in firm and solid ground? The tree grows pointing ever upwards. How many folks keep their aims, their ideals always pointing upward?

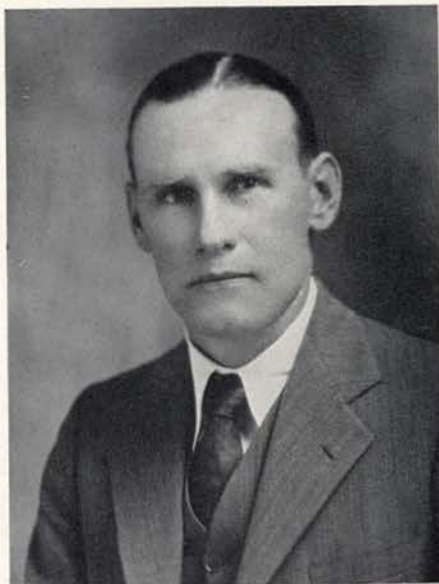
As the tree grows it spreads, throwing out its branches which give shade and comfort to the weary traveler who rests beneath it. As your advantages increase, as your opportunities grow and your possessions multiply, how much help, shade, and comfort do you give to the weary and disheartened soul who looks to you?

Standing firm and erect, the tree withstands both the scorching heat of summer and the chilling blasts of winter. How many folks are spoiled by glory, the heat of success, or crushed completely by the chill and frost of disaster? Don't only love trees but learn from them. They are among the greatest of Nature's many teachers.

NEW STATE FORESTER

Arthur W. Middleton of Weiser was recently appointed to the position of State Forester for Idaho, succeeding Ben E. Bush who had held the office since its creation eight years ago. Mr. Middleton is a graduate of the College of Agriculture, University of Idaho, class of 1932. Before entering the university in February, 1929, he had attended the Oregon School of Forestry for one year. He is a member of Alpha Zeta, honorary agricultural fraternity.

Mr. Middleton is well acquainted with the forestry needs of Idaho and the relation of the forests to the agricultural and grazing industries of the State. He has had a wide range of practical experience in the United States Forest Service where he is highly regarded. For the time being, at least, he will keep his office at Moscow.



Arthur W. Middleton

Tractor Course Proves Popular

The course in tractor operation instituted the spring of 1932 at the Idaho School of Forestry has been continued the current year but with a new "35" Caterpillar Tractor furnished through the courtesy of the Simmons Tractor and Equipment Company, Pullman, Washington and the Caterpillar Tractor Company. This year, however, more attention has been given to theory, and Professor Hobart Beresford, head of the Department of Agricultural Engineering of the University, has been conducting a very much worthwhile course for the forestry students interested, in co-operation with the logging engineering department of the School of Forestry.

The Tractor Short Course, supervised by Mr. Elmer Humphrey of the University Engineering Shops, was given early in the winter and this afforded the forestry students opportunity to obtain preliminary training. Students enrolled in the course took turns at driving the tractor about the campus and nurseries, doing odds and ends of jobs for experience in tractor operation. The class made quick work of some undesirable fruit trees growing in the nursery and performed a real service in towing a road scraper about the grounds.

An effort is being made to obtain auxiliary equipment in the way of road and trail building machinery so that the School Forest on Moscow Mountain can be improved and made more accessible.

Blasting Demonstration Practical

In order to give Idaho forestry students first hand information in the use of explosives in forest work, a short course consisting of a series of lectures and terminating with a practical field demonstration was conducted the middle of April this year for the benefit of logging engineering students. The course was arranged through the courtesy of Mr. A. J. McAdams of the E. I. du Pont de Nemours & Company and in co-operation with Professors L. J. Smith and Hobart Beresford of the Agricultural Engineering Departments of the State College of Washington, Pullman, and the University of Idaho, respectively.

A south slope of Moscow Mountain ridge was the scene of activities for the field demonstration which embraced three phases—blasting stumps for right-of-way, blasting rocks for forest roads and trails, and blasting standing trees and snags. The care and use of explosives was particularly stressed and the students handled and placed the dynamite under competent supervision. It is planned to continue this course another year and to conduct the field work on the School Forest where it is desired to remove stumps and trees for road construction and also rocks projecting along the present road.

The inclusion of this course to accompany the instruction in tractor operation gives Idaho logging engineering majors considerable practical field work.

PAUL BUNYAN'S BIG TOP

ERNEST E. HUBERT
Professor of Forestry

The year that Paul Bunyan began logging in the wilds of Idaho remained in his memory a long time—like skunk odor in a mackinaw. It was in July, during that famous period known as the Three Winters, that he bullied his snarling crews up the snow packed slopes of the Coeur d'Alenes. And it was the Fourth of July when his men, tired and cold, slashed the last tree on the slope and, topping the ridge, gazed at what is now known as Fourth-of-July Canyon. It was here that Paul ordered a huge white pine tree blazed and dated to mark the progress of this day's work and, as his voice roared through the bleak forest, it shook the snow in avalanches from the trees, almost burying the crew.

The weather was steadily getting worse. It was what old timers called a hell-bender. It had hair on it. Snow soon buried the tallest white pines from sight and the loud booming of the frozen tree trunks as they split wide open sounded through those narrow draws like cannon shots. The next day Paul tried to mark a few choice trunks for cutting but found they were frozen so solid that his usual method of pinching sections out of the bark with his fingers failed flatly. At last the camps had to be closed down.

The logging operation had been hung up for two weeks and Paul's lumberjacks, soured with cards and yarn spinning, were roaring for action. Like caged cougars, they paced back and forth in the snow-muffled bunk houses until their boot calks wore deep tracks in the rough boards and their strong language and chewing snoos both gave out.

Paul knew his men and he knew something had to be done. Yet it was getting colder and the mercury had crawled out of the bottom of every thermometer in camp and no one knew how cold it was. Joe Mufraw was brought in frozen as stiff as a peavy and had to be thawed out in the cook's oven. And, only yesterday, the water in the sheet iron tank serving as teakettle on the stove, froze so rapidly when Sourdough carelessly opened the cook shack door that the ice was still hot and steaming when he removed the cover.

Something had to be done! Paul, pacing the office shack, was tearing up a couple of old flywheel belts in despair when suddenly he shouted: "By the old roary-eyed son-of-a-rig-slinger. I've got it!" Bundling up so that only his bushy eyebrows showed, he rushed out and strapped snowshoes on Babe the Blue Ox. Then roaring defiance to the storm he and Babe disappeared westward into the white fury of wind and snow. For three days the blizzard winds howled about the storm-sieged camp like a pack of timber wolves, tearing at the

eaves and straining at the doors and windows, until the snow drifted higher than the roof ridge. The frost was six inches thick on the lightless glass and the smoke barely bulging out of the holes in the snow above the smoke pipes before freezing solid, plunged into the crusted drifts with a whish and a thud.

Above the roar of the blizzard on the evening of the third day a strange rumbling and crunching was heard and Sourdough Sam poking his nose out through a crack near the ridgepole of the cook shack, saw a strange sight. Paul, covered with icicles and snow, only his head and shoulders showing above the drifts, his arms revolving like a snow fan, was seen breaking the trail for Babe who was covered with huge poles, sections of piping, ropes and canvas until only her head and tail showed.

That night the storm shivered to a standstill and the next morning cracks began to appear in the snow where you would guess the doorways were. The gypo boys were frantically tunneling out and it wasn't long before Paul had his men sinking their teeth into one of the biggest jobs of his career—rigging a huge tent over a quarter section of snow-buried timber. The job was a holy terror. But so was Paul.

The snow was so deep that the sheer canyons between the high ridges were hard to locate and twenty of the best snoos eaters tugging at a guy rope stepped off the high ridge into Deception Creek and plunged out of sight. They burrowed through the drifts all that winter and Paul did not find them until next spring as they emerged at the mouth of the Little North Fork. Their camp sites can still be found on the little flats staggering the main stream every half mile or so.

It was not long before his men knew why Paul had brought so many sections of pipe for he strung a pipe line from his sawmill to the big tent and in no time he had steam filling the huge canvas and hissing out of every seam.

He steamed the timber for six days and nights, figuring that the snow would be melted by that time and the trees would be thawed out enough to cut down, but surprises were in store for both Paul and his men.

"Hell and high water," bellowed one bundle stiff, "these match stems are tougher than dry hemlock knots." With slush up to their armpits and five gallon oil cans as Palouser lights to cut the gloom as they felled the trees under the big top, Paul's timber beasts kept Babe the Blue Ox busy shoving the logs from the tent to the sawmill through a long tunnel shaped by the use of Paul's invention, the snow auger.

(Continued on page 51)

CLASS OF 1933

RALPH HUGH AHLSKOG

(General Forestry)

Lewis and Clark High School, Spokane, Wash.
Xi Sigma Pi, Sec.-Fiscal Agent, 4.
High Honors, 3.

HAROLD GILSON BROWN

(General Forestry)

Port Townsend High School, Wash.

WILLIAM VINCENT CRANSTON

(General Forestry)

Union High School, Mt. Vernon, Wash.

KENNETH MILES DANIELS

(Range Management)

Moscow High School, Idaho.
High Honors, 2 and 3.
Xi Sigma Pi.

WILLIAM WARREN ENSIGN

(General Forestry)

Hawarden High School, Iowa.

GEORGE MORRIS FISHER

(General Forestry)

Harlan High School, Iowa.
Xi Sigma Pi; Forester, 3 and 4; Sigma Xi.
Highest Honors, 2, 3, and 4.
Senior Forestry Award, 4.

HUME COLLAR FRAYER

(General Forestry)

Bennett High School, Buffalo, New York.
New York State Ranger School.

JESSE KYSOR HOPKINS

(General Forestry)

East High School, Rochester, New York.

CORLAND LEHMAN JAMES

(General Forestry)

North Central High School, Spokane, Wash.
Xi Sigma Pi; Sec.-Fiscal Agent, 3.
Associated Foresters, Publicity Agent, 4.

PHILIP BURTT LORD

(Range Management)

Roosevelt High School, Los Angeles.
Vice President, Associated Foresters, 3.

HORACE RICHARDS, JR.

(General Forestry)

Bend High School, Oregon.

CHARLES AUGUST WELLNER

(General Forestry)

Twin Falls High School, Idaho.
Sec.-Treas., Associated Foresters, 4.
Xi Sigma Pi; Associate Forester, 4.



AHL SKOG



BROWN



CRANSTON



DANIELS



ENSIGN



FISHER



FRAYER



HOPKINS



JAMES



LORD



RICHARDS



WELLNER

1933 GRADUATE CLASS



McNAIR



MOSS



PIERSON



TALICH

JOHN J. MCNAIR

Cloquet High School, Minnesota.
 Carleton College, Minnesota, B.A. 1930.
 University of Minnesota, M.S. 1932.
 Xi Sigma Pi.
 Thesis title for the degree, Master of Science in Forestry:
 "Esterification of Wood and of Cellulose *in situ* and the Production of Commercial Products from both the Cellulose and Lignin Derivatives."

VIRGIL DANIEL MOSS

Fairfield High School, Wash.
 University of Idaho, B.S. (For.) 1932.
 Thesis title for the degree, Master of Science in Forestry:
 "A Summary of Federal and State Quarantines with Discussions on the Diseases and Insects Concerned."

ROYALE KING PIERSON

Shariton High School, Iowa.
 University of Montana, B.A. 1930.
 Xi Sigma Pi, Sigma Xi.
 Thesis title for the degree, Master of Science in Forestry:
 "Studies of the Function of the Pycnospore of the White Pine Blister Rust Fungus."

PAUL H. TALICH

Bristow High School, Nebraska.
 Hastings College, Nebraska, B.A. 1928.
 Utah State Agricultural College, Department of Forestry, Logan.
 Colorado Agricultural College, Fort Collins, nine weeks' summer forestry camp 1931.
 Xi Sigma Pi.
 Thesis title for the degree, Master of Science in Forestry:
 "The Effect of Shading on Seedlings of Western White Pine (*Pinus monticola*)."

FISHIN'

When you see me goin' fishin'
 With my briar and my pole,
 Just know it ain't so much the fish
 That becks from hole to hole
 As 'tis the fishin'.
 Fishin' where the water's white—
 Juicy worm, they oughter bite;
 Fishin' from a tumbled tree—
 Big one snatched it, reel goes whee!
 Fishin' from a mossy bank,
 Waitin' for that thrillin' yank—
 'Tain't so much the fish I want
 As 'tis fishin' and the jaunt.

When you see me goin' fishin'
 With my fishin' pants and coat,
 Just know it ain't so much the fish
 Inspirin' such a tote
 As 'tis the wishin'.
 Wishin' that more folks would go
 Where the singing waters flow;
 Wishin' they'd just take a day
 Wanderin' round up yonder way;
 Wishin' folks would take the time
 To go up there and think and climb,
 Fish and loaf—I know it would
 Do 'em just a world o' good.

STANLEY FOSS BARTLETT
in Boston Herald

THE ASSOCIATED FORESTERS

CORLAND JAMES, '33

SHORTLY after the School of Forestry was founded at the University of Idaho the Associated Foresters came into existence and this organization has grown steadily since that time both in membership and number of activities performed. The purpose of the organization is to create good fellowship among the forestry students and foster social activities of various forms.

DEAN MILLER TELLS OF EUROPE

Prominent men in the profession of forestry are obtained to address the forestry students from time to time throughout the year. Early in the fall Dean Miller, who spent last summer in Europe, told of his experience while abroad. His remarks on sword duels which often take place between German students created considerable interest. He explained that German



The Associated Foresters

BONFIRE MEETING FIRST EVENT

Some evening at the beginning of the fall semester each year the Annual Bonfire meeting is held at Price Green in the Arboretum. This year short introductory speeches were made by the faculty, and graduate and undergraduate students. Music was furnished by the foresters' duet who sang several melodies. A successful evening was brought to a close by a feed consisting of hot dogs, doughnuts, and coffee. "Price Green" surrounded on three sides by trees forms a very suitable environment for the affair. A spacious fireplace is located at the open side.

DANCE AN ENJOYABLE AFFAIR

On the night of November 19 all foresters forgot about their studies for three hours and lost themselves in the atmosphere of music and lady companions, for it was on this date that the Associated Foresters held their annual dance. The Women's Gymnasium, used for this occasion, was decorated with pine and fir boughs that hung from the ceiling forming an evergreen canopy overhead.

students use this method of settling disputes.

C. K. McHarg, Jr., and Howard Drake, both of the U. S. Forest Service with headquarters at Coeur d'Alene, Idaho, and Meyer Wolff of the U. S. Forest Service, Missoula, Montana, were guests of the foresters during the year.

SMOKER INCLUDED THIS YEAR

To fill in that long interval which exists between the fall dance and the spring banquet a smoker was held in the Memorial Gym the first part of March. Professor C. W. Chenoweth of the University faculty, the headline speaker, being a former smokechaser, was right at home among the foresters. Music, boxing and refreshments topped off the evening.

The evening of March 27, the Annual Foresters' Banquet was held. With James Evenden, entomologist of Coeur d'Alene, acting as toastmaster and Warren Ensign making a backward flip from his folding chair, the crowd was kept well amused. Details of the

(Continued on page 51)

HERE

AND

THERE



NEWCOMB IS BEST RIVER RAT



COOK & NEWCOMB TAKE THE SAWING CONTEST



PALS - ME AND LLOYD HAYES ?



TAKING NOTES - LEWISTON MILL



SCALING TRIP TO POTLATCH



MOLLY HOGAN GYPPO LOGGING COMPANY



COONROD LOOKS US OVER



BUILDING STEPS - ARBORETUM



CAMPUS DAY 1932 - FIREPLACE CREW



SKIDDING & LOADING



SCALING LOGS - PORTABLE MILL AT TROY



SCALING CLASS AT THE LEWISTON MILL

BANQUET BETTER THAN EVER

WILLIAM V. CRANSTON, '33

*"We may live without books,
What is knowledge but grieving?"*

*"We may live without hope,
What is hope but deceiving?"*

*"We may live without love,
What is passion but pining?"*

*"But where is the man who can
Live without DINING?"*

MORE than one hundred foresters, would-be foresters, and their guests, gathered at the Blue Bucket Inn, Wednesday evening, March 29, for the seventeenth Annual Banquet of the Associated Foresters. The large crowd present was a splendid tribute to the efforts of Lawrence Newcomb and the members of the banquet committee who, through skillful planning, carried to thorough completion this splendid social affair.

"Larry" Newcomb, president of the Associated Foresters, opened the meeting with well chosen words of welcome to all present. The following guests were introduced by Mr. Newcomb: Mr. J. C. Evenden, forest entomologist and Mr. Chas. K. McHarg, Jr., regional forest inspector, both of Coeur d'Alene, Idaho; Mr. C. L. Billings, general manager, Mr. E. C. Rettig, land agent, and Mr. Walter Field, assistant land agent, all of Potlatch Forests Inc., Lewiston, Idaho; Ranger W. H. Daugh, U. S. Forest Service, Princeton, Idaho; Mr. J. J. O'Connell, general manager, and Mr. A. A. Segersten, land agent, both of Potlatch Forests, Inc., Potlatch, Idaho; Dr. F. W. Gail, head of the botany department, Dr. F. B. Laney, geologist, and Mr. T. Ashlee, florist, all of the University faculty; and Mr. Ben E. Bush and Mr. Adrian Nelson, both of Moscow, Idaho. The meeting was then turned over to Mr. Evenden, who was appointed toastmaster for the occasion. Mr. Evenden's reputation as a keen wit and a professional wisecracker had preceded him and in his capacity as toastmaster he disappointed no one for he spared no speaker in his introductions, much to the delight of those present. Mr. Evenden introduced Miss Louise Throckmorton who gave a reading which was distinctly different and highly entertaining. Following this Mr. Evenden introduced Dean T. S. Kerr of the University faculty who spoke on "The Rôle of Government in Business."

Dean Kerr stated that ours was a dual form of government; state government and national government. The United States Constitution gives the national government control over states' commerce business. This control is exercised through the Interstate Commerce Act of 1887 and the Sherman Anti-Trust Act of 1890. The former applies particularly to the railroads of the country, and the act was legislated to prevent the practice of discrimination in rates, wholesale issuance of passes, the system of secret rebates, and the charging of higher rates on short hauls than on long hauls.

The Sherman Anti-Trust Act was passed to prevent "combinations in restraint of trade," but the U. S. Supreme Court read into the Act the word "unreasonable" which reduced its force. The Supreme Court decides whether or not monopolistic control is injurious to the public. The power granted in these acts is the one and only practical means by which the national government can regulate business.

Mr. Kerr concluded his remarks by saying that the grandeur of America consists in providing opportunity for every young man and woman in this country and that we are living in the "Land of Opportunity."

At the conclusion of Dean Kerr's talk the University Quartet composed of Paul Rust, Carl Fischer, Wayne Hampton, and Reginald Lyons, accompanied at the piano by Martha Jean Rehberg gave several pleasing vocal selections.

WOLFF SPEAKS ON LAND USE PLANTING

The next speaker was Mr. Meyer H. Wolff, Assistant Regional Forester in charge, office of lands, U. S. Forest Service, Missoula, Montana, who spoke on "Land Use Planning." Mr. Wolff's twenty-four years of experience in the Forest Service enables him to speak with authority on the subject. He stated that forestry was a form of land use, and that if land is to be put to its best use, careful plans must be made. Lack of careful planning has resulted in the use of marginal lands for grazing and farming when its use for such purposes was not needed. The result is chaos. Demands for the present use of such lands and for their future use must be weighed carefully, and co-ordinated to the highest degree possible. Such plans involve consideration of population, demands for farm and forest products, taxation, interest on land mortgages, recreation, fish and game, back to the land movements, and numerous other factors.

INCOMPLETE PLANS BETTER THAN NONE

Mr. Wolff emphasized the fact that it is better to have a plan which does not measure up to expectations than to have no plans at all. Some degree of success results in plans even though these are not adequate, while no plans result in disorder and chaos. A plan is not an end in itself but a means to an end, and is worthwhile only when translated into action.

In conclusion Mr. Wolff mentioned President Roosevelt's reforestation program explaining that such a program would help out the employment situation by giving work to



On the Clearwater Field Trip

more than two hundred thousand men, and that it would help the farmer and the community, but that if such a program was to be a success it must be based on careful planning.

Two accordion solos (the toastmaster called the instrument a "stomach Steinway") by Herman Daughs, a member of the Associated Foresters, furnished entertainment and diversion, and were rewarded by rousing applause.

Mr. G. F. Jewett, Manager of Potlatch Forests Inc., Coeur d'Alene, Idaho, and the last speaker of the evening, spoke on "Forest Taxation." Forest taxation is one of the major problems of the timber industry. Present systems of taxation prohibit private timber ownership. Mr. Jewett declared that "taxation confiscates white pine in twenty years," and "that the private owner must liquidate in a few years' time." Forest liquidation is an important factor in glutting timber markets. At-

tention was called to the importance of this to educational institutions which receive an income from timber sales. At present the only way out of this situation is for the government to acquire all timber. He said that as foresters and citizens we could render real service to our communities and to the state by giving them a clear picture of this situation. Private ownership can be maintained only by some form of sales tax or yield tax.

And so ended the Seventeenth Annual Banquet, declared to be as interesting, as full of the spirit of good will and fellowship, as appealing to the sense of taste, and with the bonds which unite foresters and those interested in forestry woven stronger than ever by the feeling that we sponsor a great and worthy cause, that we can and will "Down the Depression."

MOUNTAIN TOP THOUGHT

STANLEY FOSS BARTLETT

*God, may I never weaken so
I shall be bound to levels low;
When I shall lack the strength to climb
A peak, with step attuned to rhyme,
And cannot mount where winds sweep high
I think that I shall want to die.
When last I scale a cloudy crest
Then let me tarry there to rest—
There in the blue aloof from cares,
Above the muck of men's affairs,
Beyond the cursed desire for pelf,
Outside the smallness of myself—
Thus mongst my fellows may I live,
And die when I have naught to give.*

THE 1932 JUNIOR FIELD TRIP

J. P. BROWN, '34.

SUNDAY, MAY 22.

Up at six a. m., as the modern Pepy would say, and as happy with expectancy as a little boy with a brand new red wagon. All this was in preparation for the junior class field trip to the Northern Rocky Mountain Forest Experiment Station near Priest River, northern Idaho. Those assembled for the trip were Ralph Ahlskog, Rudolph Benson, J. P. Brown, Loyd Burnett, John Cook, Kenneth Daniels, Jack Frederic, Corland James, Merton Kuhn, Paul Larsson, Paul Martin, Lawrence Newcomb, Robert Opie, Theo. Raide, and Chas. Wellner and accompanied by Floyd Otter and A. M. Sowder of the forest school faculty. We left Moscow at 9:10 a. m., almost on schedule. The cavalcade consisted of "Bud" Daniel's open air taxi which accommodated the "tractor gang," and the University truck which took care of the remainder of the juniors, including Ahlskog who occupied the floor. "Bud" Daniel's car stopped at St. Maries at Benson's home so arrived at the station a trifle late. The truck was right on schedule for the evening meal. Doings of the five tractor guys in the open air taxi after we left them at St. Maries is not available for publication, but it is known that they can identify the taste of sandwiches bought from any lunch counter between St. Maries and Priest River. Even then Paul Larsson insisted on eating supper when he arrived at the station several hours late.

MONDAY, MAY 23.

Up at seven a. m. after a very unrestful night. The writer, who is possessed with that lightning-like "Arkansas" swiftness, being the last one to bed was requested by "Prexy" Newcomb to turn out the gas light. In some manner or means his pajamas disappeared as the light was going out. As a result all the beds in the east end of the bunkhouse were searched, but the pajamas were still nil. In the morning the pajamas were found at the top of the flag pole fluttering in the wind like brilliant butterflies.

This day the juniors covered the station grounds, the buildings and improvements being explained by John B. Thompson, the resident ranger. All the buildings were investigated, under, over, and on the sides from the gas house to "Woods Office" which, by the way, is the only building at the station built according to blue prints. The juniors are now well grounded in the knowledge of the moment of force required in frost heaving to move a tamarack block from under a building. The afternoon was spent in a hike to "Crow's Nest Lookout" and along the fire break on the ridge south of the experiment station. After supper a loud noise broke forth from the vicinity of George Jemison's residence. The noise proved to be a charivari for Mr. Jemison, class of '31, and his recent bride, the former Miss Beatrice Gibbs of the University.

TUESDAY, MAY 24.

Up at seven a. m. after another pajamaless night for the whole party. Mr. Jemison explained to the boys the experimental work he is conducting in inflammability studies. In the afternoon we discovered there existed more instruments for measuring weather than we could count.

P. S.: Benson, James, Daniels, and Brown are still minus their pajamas.

WEDNESDAY, MAY 25.

"Prexy" Newcomb wants to know how all the gravel from the road happened to be in his bed last night. Benson's recreation was getting votes for white papers, even though John Cook had a majority for brown papers. Mr. I. T. Haig showed us a thing or two, in fact several things about silviculture. Mr. Sowder blossomed forth this morning minus that mourning bow tie. Maybe it changed his luck, he crossed every footlog today without falling in the creek. Through his influence, Cook has all the non-smokers to perjure themselves by voting for brown papers.

P. S.: Bribery did it.

THURSDAY, MAY 26.

Went up on the Kaniksu National Forest where Floyd Cossitt, another alumnus of the Idaho School of Forestry, showed us how hemlock is being disposed of and later some new planted areas. We found a deer that had just recently been killed by a cougar. Last night's baseball game was umpired by Loyd Burnett. Burnett says that since his eyesight deteriorated he has quit playing baseball and taken up umpiring.

FRIDAY, MAY 27.

Fought mosquitoes and tried to select seed trees. Newcomb's spiked topped trees did not seem to be the proper things. Our baseball game tonight included such notable players as Messrs. "Home Run" Koch, "Four Base" Weidman, and "Fan 'em Out" Watts from the Regional Office at Missoula.

SATURDAY, MAY 28.

Determined the distance of seed dispersion from the Knoll Plots. Visited the seed extractory at Falls Ranger Station. On the way back to the station we took Priest River by storm.

SUNDAY, MAY 29.

It is rumored that about seven juniors visited the dance at Blue Lakes last night. Went up Priest Lake to Beaver Creek Ranger Station. The "Tye" and Captain Markham's tales will long be remembered. "Dad" Frederic can repeat all of the stories with extras added.

(Continued on page 52)

JUNIOR FIELD TRIP

ZOR-ILUR-Z ROOY-
Z-AD-HZCOZ-
Z-AD-HZCOZ-
Z-AD-HZCOZ-

FORLUSI-EXULUR-SUN-
STA



GEO. YARNEAU



THE ROLL CALL



E.C. OLSON



THE DEAD DEER



THE STATION SENDS XMAS GREETINGS



BROWN'S PAJAMAS



JACK PINE FLAT ROAD



PART OF OUR BASEBALL CLUB



THE SPLASH-BIG CREEK



CASTING OFF



WATSON MOUNTAIN



FROM THE CROW'S NEST



THE FAMOUS CHIMNEY ROCK

A FOREST MYSTERY SOLVED

"LOOK, boys, there's a dead deer," exclaimed Floyd Cossitt, a graduate of the Idaho School of Forestry in 1924 and now technical assistant to the Kaniksu National Forest in northern Idaho, as he was escorting the Juniors over an old abandoned logging road.

The "boys"—fifteen forestry students of the junior class from the Idaho School of Forestry on their annual two weeks' field trip to the Northern Rocky Mountain Forest Experiment Station at Priest River in northern Idaho—stopped short and there before them lay a dead doe. Deep gashes here and there over the body were evident as if a slashing, sharp knife had been used to mutilate the animal unto death. Blood was trickling from the wounds and from the nostrils. Wide open eyes of the dead animal seemed to show an expression of intense pain and no little amount of sympathy for the deer was evident on the face of every mother's son present. The dead animal was viewed in silent bewilderment for several minutes, each man turning over the same question in his mind—"What could have killed it?"

Finally one of the boys placed his hand on the animal and exclaimed, "Why, it's still very warm. This deer met death not so very long ago." Several of the Juniors then began to examine the ground around and were ready to turn detective but there was no time just then. Our escort, however, promised to return this way after our day's inspection of forest research projects had been completed, but before our return to this place each man had suggested and advanced any number of possible solutions for this forest tragedy.

DEER FIGHTS FOR LIFE

Once back to the dead deer the boys carefully examined the area around and were not long in discovering tracks of the deer's worst forest enemy—the cougar. It was undoubtedly sharp cat-like claws which rent the animal's skin like so much cloth. The ground was trampled and torn up here and there. Small brush and vegetation were crushed and beaten to the ground showing a terrific struggle had ensued. Smaller-sized cougar tracks were also noted and right near the body of the deer were found portions of an animal's jaw containing soft tender teeth—milk teeth. But of what animal?

Further detective work uncovered an animal's eye. Again—of what animal? The doe's head was intact. There was practically no mutilation above the throat. Besides, the eye was different from that contained in the head of the deer. This eye looked like that of a cat. And the milk teeth found could also have belonged to a member of the cat family. All possible clues were carefully preserved for evening study in the bunkhouse.

On the way to the truck, which was parked at the highway more cougar tracks were dis-

covered, and apparently very fresh, probably made the night before or in early morning. Some of the boys recalled then having seen these tracks on the way in but paid little attention to them. That evening at the bunkhouse every effort was made to assemble the information and develop the solution. That forest tragedy was enacted in many ways but no one was entirely satisfied with the solution.

COSSITT GIVES EXPLANATION

The next day, Mr. Cossitt again escorted the group, this time on a timber marking project, and promised an explanation of the death of the dead deer as soon as convenient during the day's routine. He stated, at the proper time, this explanation was obtained from an old-time trapper of his acquaintance and is as follows:

A mother cougar was teaching her offspring—a cougar kitten—to kill deer and between the two the dead doe was the result. This accounts for the way the ground was trampled and dug up. The deer had made a desperate struggle against her two natural foes. After the cougars had killed the doe, the kitten was left at the kill and the mother cougar went about her way.

Before the kitten had more than started to devour the dead deer, a male cougar, commonly referred to by woodsmen as a "tom cougar," appeared on the scene, and it seems to be the habit of male cougars to kill cougar kittens whenever possible. This doubtless was what happened here and seems to account for the lone eye and portion of jaw which were found near the dead deer. The male cougar had taken the life of the kitten which was left at the kill by its mother.

Shortly thereafter and probably a very short time before the Juniors came along this old abandoned logging road, the mother cougar returned, probably called back by the screams of her offspring. Finding the male cougar had killed the kitten she took the body of the dead kitten with her, and left the scene as the boys approached.



Mr. Bird: "On your way there, two's company, three's a crowd."

A great big owl sat in an oak,
The more he saw, the less he spoke,
The less he spoke, the more he heard,
Why can't we all be like that wise old bird?

XI SIGMA PI

G. LLOYD HAYES, '34

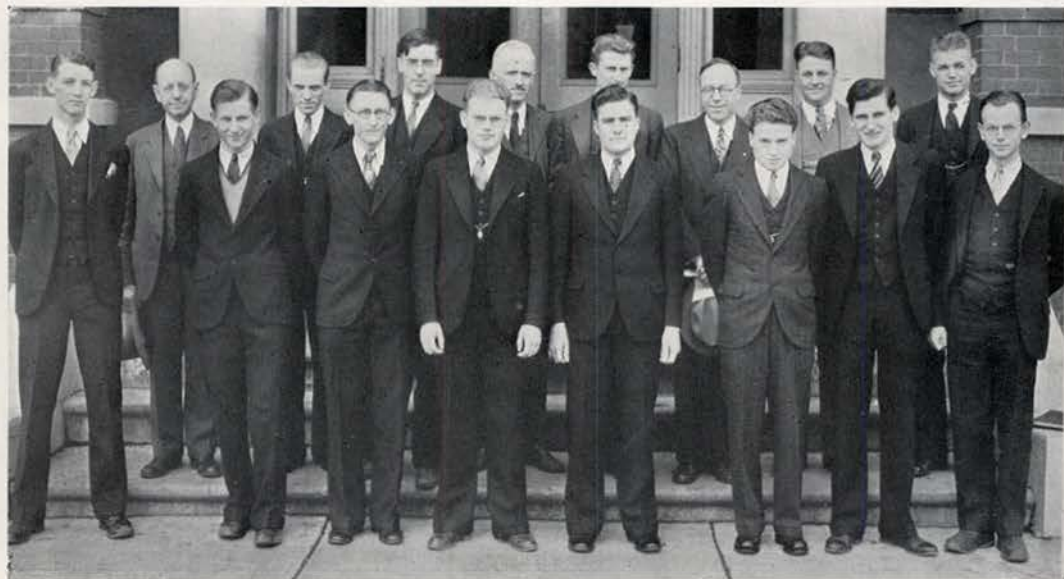
Ranger, Epsilon Chapter

EPSILON Chapter of Xi Sigma Pi has, this year, enjoyed one of its most prosperous years since its installation in 1920. As surely as this organization is the leading honorary forestry fraternity in the United States, Epsilon Chapter has assumed a place of major importance among the honorary societies on our campus.

Xi Sigma Pi was first organized as a local society in 1908 at the University of Washing-

NEW AWARD ESTABLISHED

This year the society has instituted a new award. Any graduating senior having average grade of not less than 4.5 for his first two years and 5.0 for his junior and first semester senior year is eligible. The candidates are given a weighted grade on the basis of scholarship 50 per cent, professional interest 15 per cent, personality 15 per cent, practical experience and recommendations regarding the



ACTIVE CHAPTER OF XI SIGMA PI, 1932-1933.

Reading from left to right, back row—Dean F. G. Miller, Dr. Edwin C. Jahn, John J. McNair, Stanley C. Clarke, Royale K. Pierson, Dr. E. E. Hubert, Liter E. Spence, and A. M. Sowder. Front Row—G. Lloyd Hayes, Kenneth Daniels, Paul Talich, George M. Fisher, Ralph H. Ahlskog, Charles A. Weltner, Corland James, and Dr. W. D. Miller.

ton. Since that time it has grown to be a national organization and has eight chapters located at leading forest schools throughout the country.

The objects of the fraternity are to secure and maintain a high standard of scholarship in forest education, to work for the upbuilding of the profession of forestry, and to promote fraternal relations among earnest workers engaged in forest activities. To encourage scholarship among Idaho forestry students, Epsilon Chapter has maintained in the Administration Building since 1922 a bronze plaque of artistic design. Each year the name of the student of each class who attained the highest scholastic average is engraved on this plaque. This has proved to be a forceful stimulus to scholarship. Those who attained this honor last year were: Senior, Joseph F. Pechanec; Junior, Charles A. Weltner; Sophomore, G. Lloyd Hayes; and Freshman, Floyd O. Tumelson.

same 10 per cent, and leadership 10 per cent. The award consists of membership to the Society of American Foresters and a year's subscription to the Journal of Forestry. Membership to the Society of American Foresters is attainable only through nomination by a Section of the Society and election later by the Society, hence Epsilon Chapter shall recommend the award winner to the Northern Rocky Mountain Section. This section has kindly offered to co-operate and nominate for membership the successful candidate. The winner this year is George M. Fisher, Forester of Epsilon Chapter.

A third award sponsored jointly by Xi Sigma Pi and the Associated Foresters is a silver loving cup which goes each year to the class winning the annual track and field meet at the foresters' barbecue. It was won last year by the Juniors.

This year an average of two meetings a month have been held, one a banquet, and the other a business meeting. Speakers at the banquets have come from the School of Forestry, the Botany Department, the Geology Department, the Department of Entomology, and the Agronomy Department. While these departments are all quite closely associated with forestry, topics have been chosen to cover a wide variety of subjects in an effort to get away from purely forestry discussions and get a broader perspective of these related sciences.

CHAPTER SELECTS NEW MEMBERS

New members initiated this year include Dr. W. D. Miller, John J. McNair, T. Stewart Buchanan, and Paul H. Talich. In keeping with the custom begun last year, each neophyte is required to prepare a plaque of genuine Idaho white pine (10x12x1 inches in size) and burn on it the Greek letters of the fraternity. Each member of the local chapter signs his name to this plaque and the candidate is required to carry it with him for three days prior to his initiation. In addition, the candidate is requested to wear field clothes on the day before initiation and carry with him some substantial and conspicuous tool of his profession.

GEORGE WASHINGTON MEMORIAL PLANTING

Another project completed this season was the sowing of grass seed on the George Washington Bicentennial Colorado Blue Spruce planting area which the chapter undertook last season. The plantation is conspicuously located between the west end of the athletic field

and the Arboretum. At present, plans are under way for a large stone monument which is to bear a plate having engraved upon it the names of those members making the plantation.

The second annual dance was held April 15 at the Sigma Alpha Epsilon fraternity house. This dance is our only important social event so elaborate arrangements for an enjoyable evening of dancing and cards were not spared. The patrons and patronesses were Professor and Mrs. F. W. Gail, Professor and Mrs. G. L. Luke, Mr. Otto Turinsky and Mr. and Mrs. F. A. Patty.

The officers of Epsilon Chapter for this season are: Forester, George M. Fisher; Associate Forester, Charles A. Wellner; Secretary and Fiscal Agent, Ralph Ahlskog; and Ranger, Lloyd Hayes.

Believe It Or Not

Idaho alums will recall that it is a long way from the window ledge of the large School of Forestry lecture room on the third floor of Morrill Hall to the ground outside—35 feet to be exact—but an English setter which followed George Fisher to school one day last February made it in just one jump. The dog made a little dent in the eight inches of snow and was inclined to set only for a short time. In fifteen minutes he was running around as always. After all the School of Forestry does have a lightning express elevator.

FAITH IN YOURSELF

STANLEY FOSS BARTLETT
in Personal Efficiency

When you're blue and discouraged and sore at
the world,

Despairing its lust and its greed,
It isn't a hand-out from somebody else
But faith in yourself that you need.

When the man that you think is no better
than you

Is prosperous without a creed,
It isn't a graft nor a pull nor a lift
But faith in yourself that you need.

When you're tempted to think that it isn't
worthwhile

To struggle for right till you bleed,
You will find this the answer to all of your
prayers,
It's faith in yourself that you need.

DO YOU REMEMBER?

MUSINGS OF THE ALUMS

- WHEN it took two cups of coffee for a six-weeks' quizz; four for a final, and six to fill up "Hank" Hoffman?
- WHEN "Prof" Behre took us on a field trip to the adjacent logging camps, and I (H. Baumann) couldn't hike?
- WHEN Gustafson ran a race with the "I" Club at a football game and both won and lost?
- WHEN Tom Jackson broke out of the guard house at Hayden Lake encampment and made his escape in a row boat, and the thrilling capture by the officer of the guard?
- WHEN "Big Bad Bill" Calendar used to tell us how the wobblies did things and somebody would always end it by saying "Yes, 'Big Bad Bill' is 'Sweet William' now"?
- WHEN The "Wobblies" of '27 called their meetings by hanging out red lanterns?
- WHEN Dr. Haasis said "You can pour in more cold creosote anytime now, boys"?
- WHEN Percy Rowe headed a self-appointed committee to investigate the actions of certain members of the class who were allegedly seeking to become faculty favorites? The investigation was held in the bunk-house of the Priest River Experiment Station and the third degree was freely employed.
- WHEN the fellows on the Junior Field Trip, '31, took rocks to bed with them?
- WHEN the "Coffee Club" was thriving?
- WHEN one forestry professor gave a talk about being careful about smoking in the woods, then put his lighted pipe in his pocket and burned his clothes?
- WHEN Franklin Klepinger explained in detail the duties of his summer job to "Wes" Shull, entomology prof?
- WHEN Jack Rodner almost froze his feet in front of a sorority house?
- WHEN Jemison and LeBarron spent a mensuration period discussing which way a tree leans on a side hill?
- WHEN Fred Kennedy found himself tied to a tree during a surveying lab and it was about 20 degrees below?
- WHEN and who quoted the following to the Forest Mensuration class of '29, "That Russian student thought he was measuring gold bricks"?
- WHEN a professor asked Frank Klepinger, "What do you expect to learn in this course in silviculture?" and "Klep's" answer was "That's just what I want to know, Doc"?
- WHEN a self-appointed Vigilance Committee introduced Farmer to a cold plunge in the creek at Headquarters on the field trip of 1929?
- WHEN Prof. Watson was teaching a group of lumber jacks how to trim limbs from trees? I do—"Give 'em the ax."
- WHEN Prof. Dahm arrived on time at an eight o'clock math. class? Neither do I.
- WHEN Leonard "Andy" Anderson held the "gunny" on the Junior Field Trip of 1931?
- WHEN the Foresters hiked to top of Moscow Mt. on a field trip and laid out over night? Rain started falling during the night and it was a wet and dejected party that hiked back through the mud to Moscow.
- WHEN Dr. C. A. Schenck made his original Moscow appearance in his Teutonic costume of military cape and small fedora with feather very rampant therein?
- WHEN the mensuration class ('26) returning from Potlatch unloaded a truck of partially undressed foresters? "Ike" Burroughs will.
- WHEN Dean Miller entered the log chopping contest at the Barbecue in 1925?
- WHEN Moscow Mt., our dear old lab., was hours away for any lad? Foresters then were real he men, needing no trucks to coddle them.
- WHEN the forestry class started for Potlatch, away back in the winter of 1913-14 on the electric train and had to shovel the train out of snowdrifts near Viola? Also another field trip to Moscow Mt. when the class was marooned in an old cabin all night and removed the ants from the sugar by the flotation process? When the Foresters took camp cooking in the Domestic Science Dept.? When the tallest tree in the arboretum was less than five feet in height?
- WHEN Dodd, Gill and Eastman sang "Minnie the Mermaid" over the bunk-house phone at Priest River Experiment Station and the telephone girl in Priest River caught it?
- WHEN the "Ags" missed around 500 doughnuts just before their annual dance the fall of '22? Boy, if we had had a little more time we'd had the cider also. Some feed. And a fraternity got blamed. Ha! Ha!
- WHEN the '30 guard school on the St. Joe turned out to be a "singing in the rain" party?
- WHEN Fred Kennedy '29, got lost from the main field party, climbed to the Ohio Match summit, and had to ride back down on the "Duce"? How about it, Fred?
- WHEN Arlie Decker left for the east to take advanced work? We gave him a real send-off. All who attended will never forget—not even Arlie. Ask him. On this occasion a special unveiling of the statue on the campus was had.

(Continued on page 52)

IDAHO'S RECORD TREES

FLOYD L. OTTER, '29

Instructor in Forestry, School of Forestry

WHERE is the largest tree in Idaho and to what species does it belong? How do Idaho white pines, cedars, and other trees compare in size and age with trees of this species found elsewhere? No one knows with certainty the answers to these questions. My purpose in writing this article is to put before interested readers the facts relative to the above questions which have so far come to my attention. That this information is certainly fragmentary and possibly inaccurate is recognized. It is put before you here to serve as an outline upon which we can build a more complete and accurate picture of Idaho trees. I am indebted to the United States Forest Service, Regions One, Four, and Six for most of the information recorded here.

WORLD'S RECORD TREES

H. D. Tiemann of the U. S. Forest Products Laboratories has written several articles on "big" trees of the world. For purposes of comparison with sizes to be given for Idaho trees it is enough to mention that the largest recorded diameter of a tree in America north of Mexico appears to be that of a California redwood cut in 1853 which measured 25 feet in diameter inside the bark at six feet above ground. Many trees in several other parts of the world have exceeded this in diameter. Douglas fir trees appear to be the tallest in the world. One cut in 1900 measured 380 feet by steel tape. Another is reported from British Columbia to have been 417 feet high. The tallest standing tree is reported to be the redwood, 364 feet. The redwood and Kauri of New Zealand both claim supremacy in volume, (361 and 376 thousand feet board measure respectively). Needless to say, all reports of sizes and ages of "big" trees must be carefully examined before accepting them. There are errors in measurements and in human memories. Very few reports of heights, volumes, and ages of living trees are to be relied upon to any degree whatsoever.

IDAHO "BIG" TREES

The largest tree so far recorded in Idaho was still standing July 31, 1931. It is in the Washington Creek drainage not far from Headquarters, Idaho in Clearwater County. This giant is a western red cedar, *Thuja plicata* reported by Elers Koch and J. A. Fitzwater of the U. S. Forest Service to be 39.4 feet in circumference or about 12.5 feet in diameter at breast height. Butt swell was only normal. No larger western red cedar has come to my attention. This may be a world's record for the species.

This tree takes the blue ribbon for diameter. The height, volume, and age were not and probably could not be measured. Very prob-

ably this same species holds the age record for Idaho although some junipers of southern Idaho may be older. A well guarded estimate of the ages of the large cedars of the Roosevelt Grove in the Kaniksu National Forest, near Priest River, Idaho, gives their ages as between 2000 and 3000 years. The "Story of Redwood" by Cantrell in the December, 1929 *Timberman* states that the oldest redwood logged to date was 3140 years old. The "Jardine Juniper" just south of the Idaho-Utah state line is estimated to be about 3000 years old, but there is very little upon which to base such an estimate. The record-breaking British Columbia Douglas fir previously mentioned is believed to have been 2000 years old.

The records which are on hand to date are condensed into the following table. Part I of the accompanying table gives the largest known measurements (or, in some cases, well-grounded estimates) of the largest and oldest trees found within the boundaries of Idaho. Part II gives similar information for species native to Idaho, but in which specimens of these species outside the state are reported which are larger or older than any reported to date within Idaho. Any information which will correct, corroborate or bring up to date these data, will be appreciated by the School of Forestry of the University of Idaho.

According to these records it would appear that Idaho holds world records for diameter on seven species of trees, viz., western white pine, whitebark pine, lodgepole pine, ponderosa pine, western hemlock, lowland white fir, and western red cedar. Of the seven species above it seems very likely that larger ponderosa pines have been found in other states than the one reported from Elk River. The same may be true of the other six species. We await with eagerness communications from some of the "native sons" of our well-advertised neighbor state to the south.

On the other hand we need more and better information about the trees growing right now in Idaho. Idaho ought to be able to beat Montana's record Englemann spruce. The largest western hackberry may be growing along the Salmon River. How about some measurements on mountain hemlocks, alpine firs, and Lyall's larches by you lookouts and rangers? There are some enormous fire-killed mountain hemlocks near Cook Mountain on the Clearwater National Forest. No record of sizes of our common western larch seem to be available.

Northern Idaho ought to be able to beat that lodgepole pine record from the Weiser and 'twere a pity if the yellow pine country tributary to Boise cannot beat northern Idaho on sizes of ponderosa pine. There follows a

THE LARGEST RECORDED MEASUREMENTS OF IDAHO TREES

PART 1, TREES IN IDAHO

Species	Common Name	Location	Reported By	Standing, Cut, or Dead	Diameter	Age in Years	Height
<i>Pinus monticola</i>	Western white pine	Marble Creek Rutledge Tbr. Co.	Standford (E. Koch)	Cut	92" Stump	480	5 merch. logs
<i>Pinus monticola</i>	Western white pine	Little N. Fork Clearwater River	C. K. McHarg, Jr.	Standing	84" D.B.H.	—	—
<i>Pinus monticola</i>	Western white pine	Kaniksu Natl. Forest	Howard Drake	Cut—1922	—	—	15 logs
<i>Pinus albicaulis</i>	Whitebark pine	St. Joe River	Prof. Bonser, Spokane	Standing	23" Base	—	—
<i>Pinus contorta</i>	Lodgepole pine	Weiser Natl. Forest	U.S.F.S. R-4	—	40.7" D.B.H.	—	—
<i>Pinus ponderosa</i>	Ponderosa pine	Wolf Lodge Bay, near C. d'Alene	C. K. McHarg, Jr.	Standing '29	73" D.B.H.	—	10* logs
<i>Pinus ponderosa</i>	Ponderosa pine	Elk River, Idaho	Potlatch Lumber Co.	Cut—1922	78" Stump	—	—
<i>Pinus ponderosa</i>	Ponderosa pine	Payette Natl. Forest	U.S.F.S. R-4	—	31" D.B.H.	—	208'
<i>Tsuga heterophylla</i>	Western hemlock	Upper Priest R. Kaniksu N. F.	R. H. Weidman, G. Kempff, et al	Standing '28	64" D.B.H.	—	—
<i>Pseudotsuga taxifolia</i>	Douglas fir	Cache N. F. (Not stated whether in Idaho or Utah)	U.S.F.S. R-4	—	59.0" D.B.H.	—	—
<i>Abies grandis</i>	Lowland white fir	N. Rocky Mt. Forest Exp. Sta.	G. Kempff	Standing '28	53" D.B.H.	—	—
<i>Thuja plicata</i>	Western red cedar	Washington Cr., Clearwater Co.	E. Koch and Fitzwater	Standing '31	150" D.B.H.	—	—
<i>Thuja plicata</i>	Western red cedar	Roosevelt Grove, Kaniksu N. F.	C. B. Clark, H. Flint, & Gerrard	Standing '19	144" D.B.H.	2000 to 3000	—
<i>Juniperus scopulorum</i>	Rocky Mt. red cedar	Fifield Basin Idaho Falls	W. G. Steward	Cut—1928	57.2" Base	1625	—
<i>Taxus brevifolia</i>	Western yew	Clearwater Natl. Forest	Weekly Bul., D-1 U.S.F.S. 5-22-22	Standing '16	22" Base	—	32'
<i>Betula fontinalis</i>	Red birch	Carpentier Cr. Payette N. F.	Floyd L. Otter	Standing '31	13" D.B.H.	—	—

PART 2. RECORD TREES OF IDAHO SPECIES
Reported found in other States

<i>Pinus flexilis</i>	Limber pine	Grey's River, Wyo.	U.S.F.S. R-4	—	70.5" D.B.H.	—	—
<i>Pinus flexilis</i>	Limber pine	Utah	Beacraft, U.A.C.	Standing	87" D.B.H.	—	40**
<i>Picea engelmanni</i>	Engelmann spruce	Gordon Cr., Flathead N. F., Mont.	H. Thol	Standing '29	74" at 3 feet	—	200**
<i>Pseudotsuga taxifolia</i>	Douglas fir	Near Mineral, Wn.	R. E. McArdle in U.S.D.A. Tech. Bul. No. 201	Cut	184.8" D.B.H.	1020*	225**
<i>Pseudotsuga taxifolia</i>	Douglas fir	Toledo, Ore.	Timberman, Oct., 1926	Cut	—	—	340'
<i>Pseudotsuga taxifolia</i>	Douglas fir	Mt. Vernon, Wash.	R. E. McArdle Tech. Bul. No. 201	Cut—1913	—	1400	—
<i>Juniperus scopulorum</i>	Rocky Mt. red cedar	Cache N. F., Utah	U.S.F.S. R-4	Standing '32	95" Base	2700*	42**
<i>Taxus brevifolia</i>	Western yew	Hamma Hamma Watershed, Olympic N. F., Wash.	R. D. Maclay, U.S.F.S.	—	48" Base 37" D.B.H.*	—	—

*Estimated

list of the species of trees not mentioned heretofore which are known to be native to Idaho and for which we have no size or age measurements whatsoever:

- White fir, *Abies concolor*.
- Utah juniper, *Juniperus utahensis*.
- Rocky Mt. red cedar, *Juniperus scopulorum*.
- Western juniper, *Juniperus occidentalis*.
- Dwarf juniper, *Juniperus communis*.
- Aspen, *Populus tremuloides*.
- Northern black cottonwood, *Populus trichocarpa*.
- Balsam poplar, *Populus balsamifera*.
- Narrow leaf poplar, *Populus angustifolia*.
- Paper birch, *Betula papyrifera* varieties.
- White alder, *Alnus rhombifolia*.
- Mountain alder, *Alnus tenuifolia*.
- Thornapple or hawthorne, *crataegus* sp.
- Boxelder, *Acer negundo*.
- Dwarf maple, *Acer glabrum*.
- Curl-leaf mountain mahogany, *Cercocarpus ledifolius*.
- Western chokecherry, *Prunus virginiana* varieties.
- Bitter cherry, *Prunus emarginata*.
- Cascara, *Rhamnus purshiana*.
- Western mountain ash, *Sorbus americana sitchensis*.
- Western serviceberry, *Amelanchier*.
- Blueberry elder, *Sambucus coerulea*.

PROPER TREE MEASUREMENTS ESSENTIAL

Tree diameters should always be measured at breast height—(4½ feet above ground). A string or cord which does not stretch can be carried in the pocket and used in the absence of a diameter tape. The cord can be cut or marked at the circumference length, measured at any later time and converted into diameter in inches to tenths. Care must be taken to avoid or record abnormal butt swell and gross irregularities in bole circumference. The exact

location should be noted so that anyone can check the measurements. The report should be made to the School of Forestry, University of Idaho, Moscow. The nearest National Forest officer will also be glad to receive any report of large trees. If measurements of large trees which have been cut are sent in, the location of the stump should be given and any corroborating evidence such as the names of the logging companies and the scaler or other person actually measuring the tree should be given. Newspaper clippings are of value.

OTHER RECORDS

Some other interesting tree records have appeared. The Pend d'Oreille National Forest has a section of white pine 14 inches D. B. H., with only 21 annual rings. There are only 11 rings in the last 5 inches of growth and during the last decade of its life it increased in diameter 9½ inches, almost an inch a year.

First place for height goes to the western white pine reported by Howard Drake shown in the table, Part I. He states this tree yielded 15 sixteen-foot logs or 240 feet of merchantable length. The additional length of top and stump was not stated. What site index would this tree indicate, you students of Chapman? Further, Mr. Drake states that the quarter section of timber from which the tree came cut eleven million feet of white pine besides five million "mixed" species, or enough timber for 1,000 average houses. At that, though, it would take three acres to produce as much wood as has been taken from one giant redwood.

And finally, Mister Smokechaser, with your little Pulsaki tool, how would you like to find that your fire was in the top of a 67-inch d. b. h. fire-killed Idaho white pine reported from the Kootenai National Forest and your job was merely to fell the tree.

SCHOOL HAS DISTINGUISHED VISITORS

Mr. Howard Drake, Logging Engineer of the Coeur d'Alene National Forest, gave a series of two lectures to Idaho School of Forestry students, Thursday, February 23. "Timber Appraisals on the National Forests" was the subject of his lecture to the logging and lumbering students. Later in the day he discussed fire protection to the class covering this subject.

Mr. H. L. Redlingshafer, regional fiscal agent for the U. S. Forest Service, Alaska, was a School of Forestry visitor on Thursday, November 17, 1932. His son, Thomas, is registered as a freshman in the School of Forestry. The elder Mr. Redlingshafer was greatly pleased with the Idaho forest school.

Mr. Charles K. McHarg, Jr., Regional Forest Inspector, with headquarters at Coeur

d'Alene, Idaho, chose "Aspects of the Idaho Forest Law" in his lecture to the forestry students on December 20, 1932.

Mr. E. A. Sherman, Associate Forester, U. S. Forest Service, Washington, D. C., with Mr. Meyer H. Wolff, Assistant Regional Forester in Charge, Office of Lands, U. S. Forest Service, Missoula, Montana, were callers at the School in early fall. Mr. Wolff returned late in March to be present at the Associated Foresters' Annual Banquet and on March 30, this year, delivered an interesting lecture to the students on the subject "The New Public Domain" which he has defined elsewhere in this issue of THE IDAHO FORESTER. Mr. Sherman is author of the article entitled "Planning a Forest for the University of Idaho," also contained in this issue of THE IDAHO FORESTER.

A GENERAL COMPARISON OF AERIAL AND GROUND SURVEYS THROUGH FOREST AREAS

J. A. CHAMBERLIN

Engineer, Idaho Department of Public Works

THE survey through the forest for the crossing of the Bitter Root Mountains by the Lewis and Clark Highway between Lewiston, Idaho and Missoula, Montana was undertaken by aerial methods in the interest of speed, economy, and improved survey methods. The project was undertaken jointly by the United States Bureau of Public Roads and the Idaho Department of Public Works.

A discussion of the general conclusions reached in comparison with those usually secured by the customary ground methods is of interest, as many new and essential advantages have become apparent. These advantages are individual to aerial methods, so constitute aerial method assets, and are enumerated rather than compared, as there are no ground method equivalents to set against them.

GROUND LIMITATIONS

Ground survey methods have remained practically constant as to time, cost, and scope for a long period. The speed of construction accelerates annually. Nature's obstacles and human endurance have remained constant. Man's chief limitation has been his natural means of locomotion and his limited horizontal vision. Aerial methods provide another dimension and will lift him above these limitations.

The necessity for greater dispatch in constructive decision to supplement the increasing speed in transportation and communication is well recognized. The planning and preparation for constructive undertakings usually consumes more time than the construction itself.

If constructive decision and design are not accelerated in proportion to that of the other elements, the cycle of speed and time saving will not be complete. The slower functions will nullify, to a large extent, the general advance. The net saving in time will be reduced and development be retarded in a general economic sense.

TIME FACTOR

The time factor carries an economic and political value that is not readily determinate in dollars and cents when monetary first costs are considered and compared. It is, however, a dominant factor when measured in terms of final value received. The holding of projects in suspense during long periods of investigation and ground survey is a liability on public projects and a financial loss to operating companies. Rapidity of decision allows the stream of development to flow continuously and removes obstructions that delay not only the primary project, but related ones as well.

The public or business interest which supports the particular undertaking is continually sustained by rapidity of decision. Interest is not allowed to subside through long preparatory periods during which adverse conditions may arise and administrations change.

During the preliminary period of consideration, the economic foundation of an undertaking is laid, as the primary findings form the basis for acceptance or rejection. It is during this period that the information at hand is usually most meager and assurances are slow in developing. By the use of aerial methods, this situation is reversed. All physical and topographical information is secured with the greatest of dispatch at a time when its possession is most essential. Facts are immediately at hand. The maximum information is available at the psychological time and not months or perhaps years later when conditions, opinions and persons have changed.

PERSONAL EQUATION

Preliminary examinations and reports are usually made by one individual whose findings are sometimes checked by the independent reports of another individual and on these findings the program is outlined. The reports and maps submitted are unavoidably colored by the competency and reactions of the individual maps and the scope of the examination reflect his opinion as to the sufficiency of the information. This individual attitude or "personal equation," has a greater effect and influence during the preliminary stages than at any other time. The report of the individual is considered by a superior officer who has little means of measuring its merit and sufficiency.

The present interrelation of business and departmental subdivisions is making more and more essential the necessity for joint decisions when determining upon a course of action. The situation must be considered from varied aspects by various executives. The information must be wide in scope as well as finely detailed to meet the requirements. Aerial photographs, mosaics and maps, when submitted to a management allow the subject to be considered by all concerned.

GROUP DECISION

The executive heads may then reach their own individual conclusions without being subject to the "personal equation" of any individual and without the possibility of misunderstanding any supplementary verbal or written information. The final outline for action is then developed and becomes a joint or group decision in which all interested parties have participated in proportion to their jurisdiction.

The form of the information lends flexibility to it and its completeness instills confidence by removing uncertainties. Group decision and the elimination of the "personal equation" will tend to strengthen judgment and are a natural outcome of aerial examination and surveys.

DIVERSITY OF USE

The diversity of use of aerial photographs and mosaics, particularly when made under government or public auspices, enhances their economic value and conversely reduces the ultimate cost, as the information is applicable to many purposes. Aerial photographs and mosaics embody the possibility of being developed into topographic maps. In addition they depict a replica of every ground feature and can be used for all purposes, including forestry, agriculture, reclamation, and state and government highways projects. This adaptability enhances very materially the value of the resulting information by eliminating duplication of effort. Ground survey maps would indicate and emphasize only the features or subjects directly applying to the particular purpose under consideration.

NONTECHNICAL

In many cases it is essential that certain technical aspects of projects be discussed with and made clear to nontechnical persons, for purpose of financing and appropriations. To many of these persons maps, profiles, and diagrams are not readily comprehensible. A picture or a mosaic with the project indicated upon it brings ready comprehension and when supplemented with oblique pictures, affords understanding and eliminates long complicated explanations. A common ground of understanding is thus provided and any tendency toward an individual uncertainty is removed, to the end that negotiations can proceed with more assurance and confidence in both the project and the representative.

The preceding general statements introduce a few engineering aspects of aerial surveys and some of the resulting advantages. The scale of the pictures and the extent of the de-

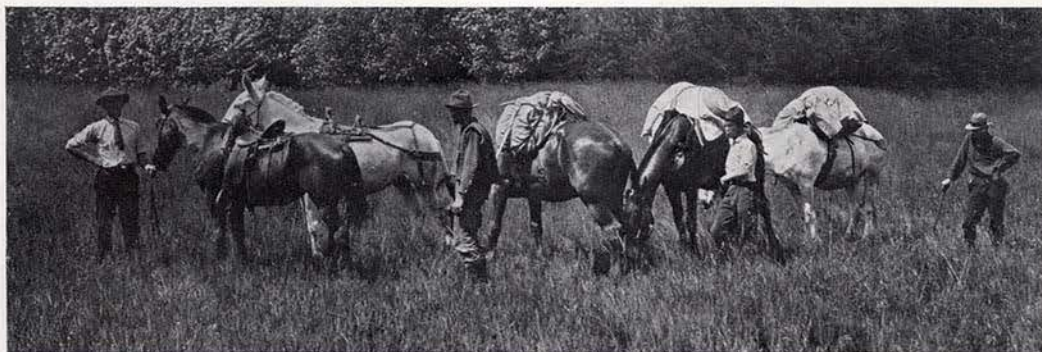
tail depend only upon the height from which the picture was taken and the extent of it is later enlargement. The map scale will vary similarly.

GENERAL COMPARISON

A comparison of relative values between ground and aerial examination, particularly on preliminary work, is not readily presentable with brevity inasmuch as the aerial method introduces new elements of great value that are not obtainable by ground methods. A dollar for dollar comparison is not equitable as the advantage of the aerial method in providing a quicker and broader understanding of the entire situation is infinitely greater than the ground method. Similar results might be obtained by either method by the same individual provided he covered the country on the ground with a thoroughness equal to the plane in the air, took enough time, and made a decision that his superiors would approve if they had seen everything that he had seen. This is a rather heavily qualified statement and the result of that procedure would be to again become subservient to the personal equation and delete all of the fundamental advantages and assurances previously enumerated.

The sole advantage would be that the man had been upon the ground and would be in a better position to classify the material. Upon returning from a reconnaissance, he would bring no corroborative evidence to support his opinion. Upon the return of the plane, a series of photographs of each route considered would be available for detailed study and consideration and would constitute a permanent record available at any time for any purpose affecting the area covered. For an exploratory flight as compared to a ground trip, the flight would cost the least.

For a photographic flight as compared to a ground trip on trails, the cost would be about the same, as the ground trip would require much more travel to gain the same understanding and assurance. In certain very difficult areas, the ground reconnaissance would cost



A Forest Survey Party Makes Use of Pack Horses to Carry Men and Equipment into Inaccessible Regions Where There Are No Roads and Often Few Trails.

more than a photographic flight, but with the qualification in each case, that ground trips do not afford the advantages previously enumerated.

It appears, then, that up to the point of actual maps and surveys, aerial methods offer a great advantage not only in time, but in returns from the cost, and further, that there is a credit balance to carry over and apply on the cost of ground control and mapping.

AERIAL RECONNAISSANCE

The effectiveness of the reconnaissance and photographic flights on the Lewis and Clark project over that of ground reconnaissance was evidenced in many ways. On the first flight the Bitter Root Mountains were crossed over the Lochsa River Route and recrossed over the North Fork Route. The Ridge Route lying between the above mentioned routes was observed at the same time. The flying time was three hours, over difficult mountain country, and the distance flown, about three hundred miles. The main streams were in deep narrow recesses and the high ground was sharp and ragged in form. The flight was made at an elevation of from 1,000 to 5,000 feet above the ground. The highest elevation reached was 10,000 feet and in only one case did the plane descend within a few hundred feet of the ground.

It was naturally supposed that the general course and relation of the routes as well as the drainage systems would show clearly, but a surprising amount of detail proved to be ascertainable at the same time. The plane was held to one side of the objective rather than immediately above it in order to permit of the ground view in perspective.

STREAMS SHOW PLAINLY

In the burned areas, ground details showed with a great clearness and the nature of the material was evident. On fully timbered sections where the trees rose tier on tier from narrow bottoms, and the river seemed to fill the channel, the details were not so readily ascertained. In this case, judgment could be rendered only from the general steepness of the side slopes, the bald rocky spots and masses of rock that had rolled into the river. The general configuration, however, was readily observed. The heavily timbered sections were not extensive in the canyons and offered little interruption.

The various routes flowed by with such rapidity that the outstanding differences were presented with emphasis and comparisons were readily made. Secondary streams could, in many cases, be seen from their sources to their mouths. The side of the main rivers having the least tributary streams was easily selected. The requirements for bridges were evident. The varied characters of ground along the river bank were easily segregated. Slopes and cliffs and the main trails showed

clearly, as well as fluffs of dust stirred by a plodding pack train, with which, perchance, there traveled some engineer on ground reconnaissance. The position of the pack train indicated to a certain degree the nature of the ground near the river by its occupancy or its avoidance.

TREES MARK HIGH WATER

In many cases a line of isolated trees stood at highwater line along the rivers and so showed that the area between them and the water was a bar, and not tenable.

Steep sections of the main streams were indicated by narrow channels and white water, and slack sections by wide channels and black water. The scars of snow slides and cloud bursts led down the slopes to fantails of debris on the river bank and bars in the stream.

The entire panorama lay spread beneath in all its detail and close or distant observation was accomplished by a word to the pilot.

Mountains led away on both sides and wide deflections in the courses of river and streams were seen in their true relations and in some cases invited cut-offs by the use of more ascent and descent. The top of the divide was viewed for many miles and the passes lay spread out for observation. There is slight likelihood of missing a hidden pass from the air. Out from the divide ran slopes and ridges of varied ground which told much of their texture by their form. Basins were viewed from all sides and peaks are circled with celerity. A remark to the pilot, and distant ground is quickly close by and then swept away as questions are answered visually. An effortless investigation conducted by a seemingly detached intellect that requires no endurance for its transportation.

ROUTES EASILY COMPARED FROM AIR

The examination of routes lying reasonably close to main streams is comparatively simple as the actual position of the line is determinate within narrow limits. The position of a supported line that may loop about is not so readily decided upon from the air as a wide area may be occupied and the elevation line can not be determined. In such cases, the examination becomes more general. The configuration and formation of the country over which a descent is proposed, is open to consideration as a whole. Desirable ground for development or support is much more readily located from the air, although ground work would be required to prove its utility and coincidence with the desired grade line.

In any case, the general character of supporting ground on any route or routes is readily open to comparison. Aerial reconnaissance eliminates that ever present fear on ground work of overlooking something by not knowing what lies just beyond one more hill. From the air, the entire area and many miles on each side are examined in a few ef-

fortless minutes and conclusions are reached that are qualified by few mental reservations!

The flights, both reconnaissance, photographic and reflights for the Lewis and Clark Highway, were completed in twelve hours of flying time and about 1,000 miles were flown. A ground party would occupy that period in traveling ten miles along the trail and making camp. The films were sent to Washington, D. C. by airmail for development and printing. In ten days from the date of taking, the pictures were received and the stereoscopic study began.

From the air, the alternate routes are considered close together and no term of time or effort lies between the observations to dull the impression derived, as is the case when traveling laboriously along faint trails upon the ground. When observed information is supported and supplemented by continuous photographs, the aerial method far outstrips ground reconnaissance in every respect. In addition, the resulting record is of much greater value, due to its increased scope and versatility of use. It is, in fact, visual proof of the conditions, while that of ground reconnaissance is simply verbal and subject to the "personal equation."

PRELIMINARY ESTIMATE

After the photographs of the various routes have been studied under a stereoscope and a tentative route has been indicated upon the mosaics, the pictures are again studied and a preliminary cost estimate is made.

This preliminary or reconnaissance estimate is made just as it would be by a man upon the ground. The ground conditions show clearly under the stereoscope. Some distortion occurs in the steepness of the slopes due to variation in the overlap of the pictures, but the same condition obtains on all the routes so the result balances sufficiently for comparison purposes.

Stream crossings are more readily determinate upon the pictures than upon the ground. Advantageous breaks in the slopes above the rivers are located at once and not passed by as when traveling below. The choice of ground along the main streams is readily made as the pictures show half a mile on each side. Cliffs and slopes are easily distinguishable, particularly in open country, and large boulders in the rivers are discernible.

BEST ROUTE READILY ASCERTAINED

When the line leaves the rivers and supports along the slope, the procedure does not continue with as much confidence as along the river as there is no gauge of elevation except by estimating the height of the trees and stepping off the ascent or descent accordingly. The character of the country shows, however, and the gross ascent is usually known, so the distance across each type of ground is determinate and the cost is estimated. The pur-

pose at this time is to arrive at comparative costs and so know the relative value of alternate routes. With these figures are placed the physical values of rise and fall, curvature and distance, together with climatic, political, maintenance, and economic values, the most suitable route becomes evident.

To the engineer making a ground reconnaissance in heavy country, the matter of distance is usually approximated, but on the air pictures that difficulty does not appear, as they can be measured on the photograph and the mosaic.

In making these approximate reconnaissance estimates, the ground method has the advantage in a more detailed classification of the material. It contains, however, the more serious possibility of overlooking the opportunities of more favorable ground that is plainly evident from the air. Estimates of this type are visual approximations based on previous knowledge of similar conditions and little variation in judgment should occur.

GROUND CONTROL

The completion of the reconnaissance flights and the photography concludes one complete section of aerial work. The choice of routes has been made and the remainder of the work required is the making of a topographic map of the accepted route and the actual staking of the located line upon the ground and final estimating of cost.

From this point, then, two courses are open. The topographic map can be made from the photographs after a ground control has been placed, or it can be made from measurements taken on the ground after a staked preliminary line has been established. The desired end is to obtain topography and tie it into a base line. This is required in order that the center line when projected upon the topography may be transferred to the ground in the same relation to the base or preliminary line that it occupies upon the map. Ground control consists of elevations on certain distinguishable points at random on the picture and also the length and bearings of the courses between the points. This information may be secured by stadia or otherwise as the conditions warrant.

A preliminary line would be a precise staked line close to the position that the highway was expected to occupy and form the base from which the topography would be taken and from which the projected center line would be located upon the ground.

GROUND CONTROL IMPORTANT

In mountain country such as that under consideration the preparations for doing either would be similar. The size of the party for ground control was less on the Lochsa than would have been the case for a preliminary line and the time taken for the fifty miles of canyon was less. Survey points upon the

ground control were not established permanently and there is no prospect of utilizing the topography in detail when the final location is made.

The question at once arises as to how extensive the ground control should be. The results obtained on the Lochsa would seem to indicate that they should either be more than was used or less. If the ground control had been placed in the form of a preliminary and have had the points well established, the projected line could have been located without the necessity of additional preliminary or topographic work.

If less work had been placed upon the ground control by using existing maps and elevations and building up a map that would admittedly contain some variations in course and elevation, the map in that case would have had about the same preliminary value and the field control would have cost nothing.

As the matter stands now, there is no ready manner by which to place the paper projection on the ground as a located line. When the line is located, a preliminary line and a working strip of topography, as well as a new projection of the line, will be required. The present work and map, therefore, is limited to preliminary and general purposes.

TWO PHASES OF WORK

This situation is no reflection upon the aerial surveys but the recitation of a result due to occupying an intermediate position. This develops the fact that aerial mapping and topography divides itself into two classes. One class for preliminary estimate purposes and one for final detail work. These two classes vary in value in proportion to the scale of the map, and the accuracy, class and permanency of the ground control. The cost varies in a similar ratio and their desirability in proportion to their cost as compared to that of the usual ground survey costs when supplemented by aerial photographs.

SCALE OF MAP VARIES WITH COUNTRY

The Lochsa River aerial map was made on a scale of 500 feet to the inch and the contour interval was ten feet. For a country as difficult as that through which the river passes, that scale is too small to permit the projecting of a close final line. A final ground map to a scale of one hundred feet to the inch will be required over the strip that will be occupied by the highway. This aerial map then falls within the preliminary class and as such, the necessity for refinements in the quality of the ground control were not vitally essential, and could have been heavily curtailed without affecting the net value of the projection and estimate made upon the map.

The quality of the ground control should

NOTE: Mr. G. E. McKelvey is Commissioner of Public Works and Mr. J. H. Stemmer is Director of Highways for Idaho.

vary in proportion to the scale of the map. The scale of the map should vary in proportion to the roughness of the country. The price of the map can equal the price of a ground preliminary and topography on one line plus a reasonable amount for the increased scope of the information.

The aerial map, however, has an outstanding advantage in utility over the ground map by reason of its greater scope and detail. In addition, increased width in the topography to include both sides and the slopes above a river does not increase the cost proportionally for the reason that no additional flying is required and little more ground control. On ground surveys, additional preliminary and base lines would be required for expansion of the area and for alternate propositions. The ground map usually covers a limited strip. The sufficiency of this strip is determined by the individual upon the ground and there is little opportunity to study alternatives and to guard against oversights.

The flexibility and completeness of aerial survey information, its diversity of use and the ready expansion of topographic area, makes it a more positive and complete source of understanding than the usual ground methods. The enhanced value of the results and the safeguards in judgment that it affords makes it a better dollar for dollar investment and justifies a greater gross expenditure than ground work because it is very evident that the ultimate net economic cost will be less.

Appreciation

The editorial staff of The IDAHO FORESTER is grateful to the contributors for their part in the publication of this issue. The staff also acknowledges the co-operation of several agencies in supplying certain cuts. The University of Idaho Publicity Department supplied the cut appearing on page 41. The Caxton Printers, Ltd., Caldwell, Idaho, publishers of this year's edition, furnished the cuts on pages 1, 2, and 6, and supplied the art work for the hand lettered heading of The IDAHO FORESTER appearing on page 3.

Time Flies

A "green" fire fighter was aroused from his slumbers at 3:00 a. m. to begin the day's routine. Getting ready for breakfast he was heard to say, "It sure doesn't take long to spend a night in this country."

During his youth he was a knotty problem, but his father was a lumberman, therefore he was a chip off the old block.

AN ADDRESS TO THE ASSOCIATED FORESTERS

GEORGE M. FISHER, '33

Delivered at the Bonfire Meeting at Price Green, October, 1932

Mr. President and Associated Foresters of the University of Idaho:

NO DOUBT everyone here, with the possible exception of the freshmen, knows what an honorary fraternity or society is. Existence of such an organization in our School of Forestry is evident, but some of you know very little more than that. I have recollections of reading in the catalog about such an honor society when I was a freshman in the University. But it was not until my sophomore year that I fully realized what the organization meant, what the functions of the group were, and how admission was possible.

Xi Sigma Pi, National Forestry Honor Fraternity, stands for an honor society in every sense of the word. It is a distinct honor to our institution and is based upon the very highest of standards which are recognized in our Forestry School. It is an honor to the profession of forestry because its representation is selected with much care in regard to the active forestry profession and is composed almost 100 per cent of men now engaged and holding high positions in this chosen field. It is an honor to the individual when he is recognized and chosen for membership. I think I am right in stating that no one ever received membership in Xi Sigma Pi who did not earnestly work for it and did not feel that after he had received this honor that it was indeed another victory won.

MEMBERSHIP IMPORTANT

The organization has grown up with the field of forestry. Established in 1908 at our neighboring institution, the University of Washington, it has now a membership of almost 1000 and has eight chapters represented in the country's finest forestry schools. This membership figure means considerable as there are not very many thousands of men at the present engaged in forest activities. A further comparison is possible when it is known there are roughly 2500 members of the Society of American Foresters, the largest group of professional foresters in our country.

The local chapter at Idaho has been in existence 12 years, the charter having been granted in 1920. It has steadily grown in importance in our school, having one of the strongest alumnae chapters in the fraternity, as well as one of the best represented in the profession. At the end of last year the active resident membership of Idaho Epsilon Chapter was 19. This fall the group is represented by 16 actives.

The objects of the fraternity are: 1. To secure and maintain a high standard of scholarship in forest education. 2. To work for the

upbuilding of the profession of forestry. 3. To promote fraternal relations among earnest workers engaged in forest activities.

SCHOLARSHIP ESSENTIAL

You will see from this that recognition of membership by the group would be based on scholarship, activity in forestry work, and true professional interest. The eligibility requirements are high and stand among the top in relation to other existing societies. But they are high for a purpose. It is necessary to maintain forest school standards and professional forestry on par with the best of other professions. Also an honor difficult to attain and worth working hard for is much more valued and appreciated after such an honor is obtained. Three-fourths of all the grades a student makes during his college course must be B or better or in other words above 80 per cent. Second semester junior standing is necessary except in a few cases where a limited number of students of exceptional ability may be pledged during their first semester of the junior year. A failure in any forestry subject completely rejects the student from membership. Faculty members and graduate students with the necessary high scholastic records coming from institutions that do not have a chapter of Xi Sigma Pi are eligible for membership.

Now this leads up to one thought I wish to get across to the new students tonight. Start right now working toward a membership in the fraternity. It may not seem urgent at this time but it is most important. When you get to be sophomores and juniors and realize that you would like to be a member of Xi Sigma Pi, and what it may mean to you, it might be too late. An eligibility requirement of 75 per cent B and better is hard to make and it is mighty important that you start working for this in your first year of school. Let me give exact figures to explain what I mean.

HIGH GRADES FIRST YEAR IMPORTANT

The average student in the forestry school carries 18 credit hours each semester or 36 a year. If the student completes 20 hours of work B and better the first year, which is above the average, this gives him 55½ per cent above C. But even then the following year this student must make all but two hours of this 36 earned his second year, B and better, to be eligible for Xi Sigma Pi with a 75 per cent. How many do this? The thing to do is work for good grades and get interested in scholarship your first year in school. It is

(Continued on page 52)

The Benefits and Services Rendered By the National Forests of the State of Idaho

(Continued from page 10)

ber is to provide the material for consumers throughout the nation, nevertheless the benefits to the local state and its people are so great and of such vast service to them that, were the federal government not carrying the task, the state itself or its counties would be virtually forced to undertake the effort, to far larger extent than now, to protect the prosperity of a large portion of its people.

MANY DEPEND ON WATERSHEDS

The other basic purpose of the national forests is watershed protection; the stabilization of waterflow and the prevention of erosion. How vital is water in Idaho for irrigation is well known and attested to by the fact that of over forty thousand farms in the state about 60 per cent (comprising 55 per cent of the improved acreage) are irrigated. Over \$90,000,000 has been spent in irrigation works. Idaho's streams are capable of generating 2,000,000 horse power, although it should be borne in mind that not all this horsepower will be developed in the state for a great many years.

Virtually all streams of importance for irrigation or for power have their source among the high forested slopes within the national forests. Despite the fact that no abuse of the mountain watersheds could wholly destroy this resource, the loss of the timber or other plant cover might result in depreciating a large part of a value. Height and duration of floods would be accentuated and the much needed water during the irrigation period would be much reduced. Erosion from barren hillsides would result in silting up reservoirs and canals, making their maintenance more expensive. The government's efforts in the national forests in preventing forest fires, overgrazing, and the thoughtless cutting of timber safeguard these watersheds against the effects of such mistreatment. The farms and the water power developments have indeed a considerable interest in the national forests and are rendered an enormous service through the federal government's safeguarding of their benefits.

GRAZING RESOURCES VITAL

Intermingled with the forest-producing land and integrally a part of them, particularly in the national forests in the southern part of the state, are lands carrying forage values of considerable utility. These forage resources are handled under the same general policies of constructive and conservative use that are applicable to the timber. Thus is insured a permanent production of range feed upon which

the welfare of many a livestock producer is heavily dependent. Furthermore, by the system of preferences that is established under Forest Service policies the smaller stockmen have equal opportunity with the larger and more powerful, for finding range for their stock. Constancy and stability in the number of stock permitted, based upon the output capacity of the land, is a further benefit to the stockmen so they can plan ahead with reasonable confidence on their livestock production operations.

For the convenience and economy of operation of the range users the government is continually improving the range facilities through such activities as driveway construction, water developments, rodent and poison plant eradication, and drift fence construction, things that no individual could undertake but which redound very greatly to those who obtain annually in the neighborhood of 3500 permits to use the range.

It is commonly agreed among stockmen and land use students that some control of the open range is essential. Experience has shown that not otherwise can the public range be protected from the first-come-first-served scramble for its resources with consequent overgrazing and rapid deterioration of great injury finally to all users. Many of these range lands are of such character that it is very questionable whether they would have gone into private ownership and remained there, interest on investment and tax charges being considered. They would then have remained public domain range subject to all the abuse that the remaining public domain range meets in most of the western states.

GRAZING FEES LOW

It is to be noted also that the fees charged by the government for range per head are low compared to the fees very generally charged on private lands of similar range character, and much below the usual cost per head that a stock producer would have to bear in the event he owned his own land; oftentimes the cost per head of government range is less than the cost per head of the taxes alone on privately owned lands. One cannot help but note that in spite of appeals for grazing fee reductions from livestock men in many quarters who are using national forest ranges, the fact that they are getting the range at less cost than they would probably through any other ownership, coupled with the marked advantages of the government methods of range use control, has resulted in national forest grazing users so well satisfied that they have in many an instance urged the extension of national forest range control to other public domain range lands.

How important an element are the national forest ranges in the livestock-producing business of the state is evident by the fact that over 60 per cent of the 2,275,000 sheep and

close to eighteen per cent of the 635,000 cattle in the state find range in the national forests. The livestock-producing operations behind the stock grazed on the national forest ranges, on which they vitally depend, have an estimated value of very close to \$20,000,000.

FOREST SERVICE DEVELOPS RECREATIONAL USES

The recreational resources of the national forests are of considerable benefit to the citizens of the state because they lie practically at the back door in most places and at very short distances elsewhere in the state. The Forest Service policy is to encourage the use of the forests for recreation and to develop recreational resources and to make them more readily usable. Camping and picnicking, hunting and fishing (except for necessary state licenses), are free of charge. These are the principal recreational uses made of the forests by the local people. The seven-year average, from 1925 to 1931 inclusive, for this form of recreational use came to slightly over 135,000 people. How rapidly this is growing is evidenced by the fact that the figures for 1932 alone come to slightly over 190,000. Other forms of recreation are also encouraged; for nominal fees tracts for exclusive use for resorts or for summer homes can be obtained under a minimum of restrictions designed to protect public interest and other recreational uses.

Just how many of these visitors hunt or fish is a number not available but it is known to be large. They are attracted by the over 80,000 head of big game, and the fine fishing streams virtually everywhere in the national forest areas. The Forest Service liberally and whole-heartedly co-operates with the state game authorities in fostering the fish and game and enforcing the game laws. In the formulation of the very essential game management plans, insuring foresight in these matters, the Forest Service has considered its responsibility virtually co-ordinate with that of the state agencies, since it is a Forest land use that is concerned. It is only with such plans that the present and future well-being of the game and fish resources can be soundly assured.

GUESTS OF STATE BRING REVENUE

What portion of the recreation users come from outside the state it is possible only roughly to estimate. Assuming that 10 per cent would be a conservative figure, the actual recreation occupants of the national forest land, other than Idahoans, come to about 20,000 in terms of approximate person days. A great contribution this is to the pleasure, inspiration, refreshment and health of the state's guests. It is also a source of inflow of outside money; it has been conservatively estimated that every day's recreation use represents a local expenditure of \$5.00. Thus results an estimated income of \$100,000 annually. And

it is to be confidently expected that this use will greatly increase with return to normal conditions in the country and as machine development constantly enables mankind to enjoy greater and greater leisure. The Forest Service recognizes recreation as one of the major uses of the national forests and gives it a prominent place in its land use, protection, and development plans.

Very clearly its national forests are of manifold benefit to the people of the State of Idaho, far in excess of any sacrifices that may be considered—chiefly in the form of taxes that may have been collectible on a small part of the lands had they remained open for private acquisition. It is to be borne in mind, however, that the major reason for the forests as a national enterprise is to insure their benefits for the people of the nation, which could not be attained by any other means than federal ownership and control. The government in the national forests as with other of its activities, undertakes its burden with the aim of benefit and service to the people of the nation, as well as locally, and not for any profit or other direct financial gain. Fundamentally that is why the national forests in Idaho are of such great benefit to its people.

George Washington Memorial Dedication

The members of Epsilon chapter of Xi Sigma Pi met in the Arboretum the noon of Campus Day, May 10, 1933 for a luncheon and formal dedication of the George Washington Bicentennial Memorial.

After a lunch of coffee, beans, sandwiches, and pie, served at "Price Green" by Paul Talich, chairman of events, the stage, consisting of two chairs and a table, was set for a clever playlet entitled, "The Moonshiners." John McNair and Dr. W. D. Miller composed the cast.

The group then adjourned to the memorial planting of 19 Colorado Blue Spruce nearby, established May 3, 1932. Dean F. G. Miller officially dedicated the memorial, addressing the members as they gathered around the large granite rock upon which a bronzed plate had been mounted commemorating the planting.—G. M. F.

Grin and "She" Grin

Do you remember that November
When two budding woodsmen
With axes in hand
Went for some firewood at Watson's command
And then came back
With a tamarack?

—An Alum.

Range Management on Indian Lands

(Continued from page 12)

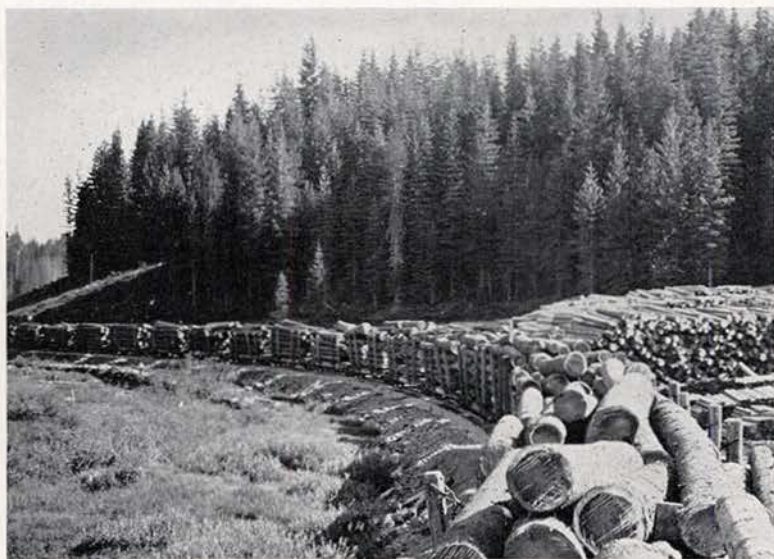
Obviously, an Indian cannot engage in the stock business on 160 acres or ordinarily even on two or four times that amount. Furthermore, only a comparatively few Indians have indicated an active desire to utilize their individual holdings. The result is that the Indian Service must block up ranges composed of scores or hundreds of allotments and then secure an agreement among the owners of such separate parcels as to the conditions on which they are willing to allow a permittee to use their lands. As many of the allottees have died and their interests are now held by numerous heirs the details of administration are very complex and difficult.

Fortunately, on the reservations in Washington, Oregon, Wyoming, Arizona, and New Mexico large areas of grazing land are yet held in a tribal status and a unified control and conservation management is practicable. Such management seems unquestionably the logical one both from the standpoint of the Indians and of the public at large. Considerable thought has been given by the Forestry Branch of the Indian Service to the devising of a plan that will insure a unification of ownership and control over allotted areas that are adapted only for range use, but as yet no satisfactory solution of the problem has been found. It is extremely difficult to consolidate ownership after a natural grazing area has been subdivided into hundreds of separate legal tracts and separate patents issued to individuals.

With the limited funds available for range

administration on Indian lands, it has not been practicable to undertake intensive reconnaissance nor is it thought the results to be obtained from such studies would be commensurate with the cost. The principal objectives for the next five years at least should be (1) the grouping of allotments and arrangement of grazing units on tribal lands so as to secure the best utilization of range values; (2) the convincing of permittees and Indians that it will be to their own advantage to adopt the bedding out system with sheep, to keep the stocking of their ranges conservative and to develop water and other range improvements; (3) to bring to the Indians a realization of the need for conservative management as a means of assuring future income from their lands; and (4) to educate the Indians in methods of improving their flocks and herds with a view to the ultimate utilization of the greater part of the grazing resources on Indian lands by Indian-owned stock.

All of these objectives are so obviously desirable that it may seem that they would be easily accomplished. Such is not the case. The grouping of allotments is often opposed by individual Indians from selfish motives and both Indian and white owners of stock often desire an assignment of range areas not consistent with sound management. There are still permittees and Indians who keep their sheep too long at the water or at other convenient locations. The task of selling "conservative range management" and "improvement of stock" to a people who are peculiarly indifferent to the motives and ambitions for economic advancement that actuate the Caucasian race is one requiring great tact and patience.



Idaho White Pine Saw Logs Leaving the Clearwater Region. The Clearwater Region of Northern Idaho has the Largest Body of Western White Pine Extant. A Stand of Second Growth Timber is Shown in the Background.

JUNIORS REPEAT BARBECUE WIN

THE Junior Class of the School of Forestry seems to have a monopoly on the Barbecue contests for they again won the tenth annual affair with a handsome margin. The Juniors emerged with a total of 40 points as against the Sophomore total of 24 and the Frosh of 19. The Seniors also competed. Keen rivalry was evident for each class was constantly priming and tuning up its gladiators to fighting pitch and the same spirit which marked the success of the first barbecue held May 24, 1924, at the mill site on the School Forest, was much in evidence at this year's meet.

The Barbecue Committee headed by Maurice March, spent Campus Day morning, May 11, 1933, making arrangements for the meet to be held in the afternoon at Luvaas Grove, five miles northeast of Moscow, and had everything in readiness for the "gang" which began arriving at 1:30 p. m. Baseball served to loosen up stiff muscles and put the contestants in a fighting mood for the field meet which was called just in time to prevent a casualty so far as the umpire was concerned.

Cranston, senior entry and sprint ace of barbecues of former days, raced neck and neck down the straightaway with March, champion of more recent barbecues and running for the Juniors, only to lose when March stuck out his tongue to win the race. Davis came in third for the Sophs while Stevens, Frosh representative, came in last.

The three-legged race ended in a three-point landing and a win for the Sophomores with the Davis and Ziminski team taking a pretty spill right at the finish. The first win for the Frosh came in the sack race when Nelson crossed the tape a split hair ahead of Wright for the Juniors, followed by Heger for the Sophs.

RELAY PUTS SOPHOMORES IN LEAD

The judges had difficulty in selecting the winners of the relay race for the four teams were very evenly matched. The Sophomore team, though, had the edge and this event gave them a one point lead over the Juniors. However, when the scrambled eggs were unscrambled after the egg-tossing contest, the Juniors were back in the lead with a win by Ledford. The usual caustic statements about the winner using hard-boiled eggs were tossed about prolifically as were the eggs, but when the "crash" came, such remarks were forgotten. Carlson for the Sophs took second place in this event with Larsson for the Seniors third.

LEDFORD TAKES ANOTHER FIRST

Parker, another Junior, took the tree climbing contest, reaching and returning from the 24.3 foot mark in the remarkable time of eleven seconds flat. Newcomb took second place for the Seniors. Ledford's weeks of practice were not sufficient to displace Newcomer's mark made several years ago in the

"Horseshoe" contest, but it was enough to take first place for the Juniors. Frank Cline, Frosh entry, had a backfire so was disabled for further contests during the afternoon.

In the one man bucking contest, Tumelson for the Sophs pushed and pulled the saw for a handsome win in spite of Sach's persistent coaching and encouragement to his classmate, the Frosh entry, Lownik, who placed second. The two-man bucking contest was won by the Wright-March team for the Juniors with March making a valiant effort to ride the saw without a saddle. The "T-bone" Hultman-Tumelson combination placed a close second for the Sophomores.

LAST EVENT A CLIMAX

The final event was a free-for-all in which it was every man for himself and the devil take the hindmost. When each forester had his plate full to overflowing with luscious food, he was seen to go into a huddle or a cuddle with himself and later to emerge with that satisfied smile prevalent only when all wrinkles are ironed out. By this time Nature was drawing her curtains and nightfall saw the finale of the Tenth Annual Barbecue.

Place of Chemical Research

(Continued from page 16)

building boards. During the past decade this industry has developed rapidly and has assumed a position of importance in the building trade. The annual consumption of wall and insulating boards in the United States is now about 900,000,000 square feet. Practically all of this is produced domestically and, in addition, the United States exports about 200,000,000 square feet annually. Since fiber boards are largely manufactured from wood they have taken a definite place in the economy of forest utilization.

The uses for fiber boards are continually expanding. A recent paper on the subject lists 121 uses for hard pressed and insulation board alone. Besides these two types of fiber boards there are the wall boards which are widely used as a finishing cover for partitions, ceilings, and interior walls. Fiber boards are manufactured in order to improve upon certain properties of wood and to add other specific properties for insulation, plaster holding, and acoustics.

Many, if not most fiber boards made of wood, utilize sawmill waste. In the Pacific Northwest an insulating board is made from Douglas fir sawmill waste, and several other examples of waste utilization for fiber board manufacture may be cited.

MECHANICAL PROCESSES REQUIRE CHEMICAL CONTROL

Some fiber boards are manufactured entirely by mechanical processes by which the fibers

are rubbed or torn from one another. The masonite process depends upon the explosive force of steam to separate the fibers. Chips are placed in a chamber and steam under high pressure is introduced. This is suddenly released and the internal pressure in the chips causes them to explode producing masses of fiber bundles and individual fibers. The production of boards by these mechanical processes require the strictest technical control and also much research in the chemistry of lignin and fibers.

Many fiber boards are made from wood by chemical digestion or by a combined chemical pulping and mechanical shedding process. The same principle of pulping applies here as in the production of paper pulp. However, the processes used are usually milder and only a portion of the lignin or cementing material is removed from the wood, allowing the fibers to be readily separated by mild mechanical action.

Intensive research is being carried out on fiber board manufacture. This research covers not only production of the pulp and methods of control during manufacture, but also the water, fire, decay and termite proofing of the boards.

The most spectacular of the modern chemical forest industries has been the development of rayon and related products. This industry did not, however, develop overnight but had its beginning in the fundamental cellulose research of the nineteenth century. Chardonnet's investigations dating from 1878 laid the foundations for the Chardonnet process which began commercial production in 1900. The production of rayon by the viscose process began at about the same time as a result of the chemical discoveries of Cross and Bevan, two English chemists. At present 85 per cent of the world's rayon is made by the viscose process. Purified wood pulp is the principal raw material used.

Both the wood pulp which is used to make rayon and the final product are cellulose. They are chemically the same. By chemical means the wood cellulose is modified and brought into a thick viscous solution. This solution is then forced through miniature round openings into an acid bath which transforms the fine stream of modified cellulose in solution to a continuous solid cellulose fiber.

CELLOPHANE FROM CELLULOSE

Rayon is not the only product of the viscose process. If the viscose solution is forced through a slit instead of through fine holes, a thin transparent sheet is obtained, known as cellophane. By mechanical variations other products such as sausage casings, braid, ribbon, artificial straw and horsehair may be produced. Fruit is sometimes given a protective cellulose coat by a dipping process.

The Chardonnet and the acetate processes for rayon both use cotton cellulose for their raw material. From cotton cellulose are also

manufactured smokeless powders, various lacquers, plastics, films, toys, safety glass, and a variety of other products. During the war wood cellulose was used for smokeless powders. These proved effective even after 10 years' storage, and there is no reason why the use of wood cellulose cannot be continued. Research on the refining of pulp to obtain uniform quality and to control viscosity may enable the use of wood cellulose in the lacquer and plastic industries.

Braconnot in 1819 converted wood cellulose into a simple sugar which was not only edible but fermentable to alcohol as well. The commercial production of sugar and alcohol from wood has received much attention since Braconnot's time, and partial success has been obtained. In Germany hydrolyzed wood is used as a stock food. Four commercial plants for the production of alcohol formerly operated in this country. Continued research on improved production and the increased use of alcohol may put the process on an economical basis not only for the production of alcohol but for a variety of sugars which may be of industrial value.

Many other chemical products from wood may be mentioned. The utilization of wood waste for gas generators offers many interesting industrial possibilities. Various wood extractives are used as raw material for tannin, dyes and medicinals. The western larch of the Inland Empire contains a potential raw material in the form of galactan. Patents have been taken out on the preparation of mucic and oxalic acids from larch galactan. These acids have wide industrial application.

From this brief discussion it is seen that wood is a chemical raw material and that the chemical utilization of wood is an important part of forest utilization. It is obvious that for the improvement of these chemical products from wood and for the extended usefulness of our forests through the development of other valuable articles, chemical research is an important part of any forest utilization program. Because our knowledge of the chemistry of wood is still so imperfect there is justification for optimism with regard to future developments in the chemical utilization of wood.

PIGGLY WIGGLY

The fire fighting crew just off a 20-hour shift was taken to a restaurant to eat. The waitress inquired of the first one who happened to be as big and tough as they make them, "What will you have, sir?"

"Beef."

"And how do you want it?"

Impatiently he replied, "Just drive in a steer and I'll bite off what I want."

Extension Forestry in Idaho

(Continued from page 21)

Signs have been erected to attract the attention of the farm traffic to the projects. No quick returns were expected from these plots, but the beneficial results of these managed projects should be evident within a decade, and it is hoped that they will serve as an object lesson to farm woodland owners in the respective communities. When suitable co-operators can be located, more of this work will be done.

OTHER PROJECTS

There has been a slight interest shown, among farmers of Idaho, for the preservative treatment to prolong the life of fence posts. This is not only true of Idaho farmers, but is true in many other states. The cost of coal tar creosoted posts is the least expensive in the long run, but the initial expense is much greater. As long as the farmer can procure posts from thinnings on the National Forests, we cannot expect him to consider creosoting his posts.

FOUR-H CLUBS

One cannot teach old dogs new tricks, but through the 4-H Club projects we expect to keep our young people interested in the value of forested areas to our state. Four-H forestry clubs have been increasing in enrollment quite steadily, and this phase of the extension project calls for subject matter for the four years' training. Outlines have been prepared on tree appreciation, tree planting, woodlot improvement and tree nursery practice. To advance in extension work, much publicity material is necessary; through repetition the idea is finally put across. Approval has been given to issue an extension circular on farm forestry for Idaho farmers, and publication will probably occur this year. Forest Service officers have been very willing to co-operate with this department in both county agent and non-county agent counties.

Paul Bunyan's Big Top

(Continued from page 24)

On the second day of the cutting Paul was "stepping on 'em" trying to get the big canvas set up over the next quarter section when Joe Mufraw, the millboss, came tearing through the drifts leaving a trail of windfalls in his path.

Usually excitable, he was now wildly dancing around and waving his arms. "By Gar, Paul, you cut dead timbair, eh? Why for she's not green? *Sacre tete de cochon!* Dese plank—she's come out *dry!*" As Joe explained, hell

was popping in the mill; the odor of dry scorched wood was in the air; dry slivers were flying in all directions from the head saws; the bands were running hot and the men could barely keep the boards cleared ahead of the machines as the stock moved out over the green chains—dry as camp hardtack. The steam had dried the trees on the stumps and Joe Mufraw was cutting dry logs!

Paul strode over to the mill to see for himself. He was so tickled to find this true that he slapped Joe on the back with gusto and dislocated his collar bone. Chuckling over his latest invention, he brought over an armful of dry planks for Sourdough Sam to use as kindling wood in the cook shanty.

Paul used the big tent to finish the winter's cut and when warm weather returned he set it up over his drying yard near the mill. Thus he was able to season his lumber both summer and winter, and to this day lumbermen have used Paul's idea in kiln drying their product.

Associated Foresters

(Continued from page 27)

banquet are announced elsewhere in *The IDAHO FORESTER*.

Officers for the year are: President, Lawrence Newcomb; Vice President, John Cook; Secretary-Treasurer, Charles Wellner; and Ranger, John Parker.

FORESTERS' BALL PROVES UNIQUE

AUBREY ARTHURS, '34

THE annual foresters' ball, one of the outstanding all-college dances of the year, was held November 19 in the Women's Gymnasium. As has become the custom for this affair, the dance hall was so decorated as to impress one as dancing under a closed forest canopy. Cider was served during the evening at a log cabin which was built among the trees in one corner of the hall. A very realistic representation of a forest fire, secured through playing colored lights on an enlarged glass painting, added to the decorations.

Paul Bunyan's widely known blue ox, "Babe," featured in announcing the various dance numbers. "Babe," carrying a placard announcing the dance, was made to cross one end of the floor at scheduled intervals. With another year's training it is hoped the ox will broadcast the information direct. The customary large crowd was present at the dance.

An Address to The Associated Foresters

(Continued from page 45)

increasingly harder to do this every year and the low grades the first year are not unlike the old ball and chain—pretty hard to drag along and after the second year may be even impossible to unshackle. It pays to get a good start, men. It makes the sledding in the following years much easier. If you get this idea of working on scholarly attainments early in the game, the professional activities, contacts, and interests that go to make up what is recognized as the attributes of a real forester, will later take care of themselves.

Xi Sigma Pi would like to recognize each one of you, but the attainment of the goal is up to you. Do not hesitate to go to any of the members and especially the instructors to ask questions which may come up in your mind about what I have discussed tonight. We as a group want to be interested in each individual student and give him all help possible in his educational problems.

*In the shade of your murmuring pine trees
Is healing and peace and rest,
The long dim trails on the mountain side,
Call men of the East and West.*

The 1932 Junior Field Trip

(Continued from page 31)

MONDAY, MAY 30.

Today may have been Memorial Day for some people, but just another work day for the juniors. Did some preliminary thinning work. In the afternoon we visited some established thinning plots and calculated the thinning to be done on our own thinning plots.

TUESDAY, MAY 31.

Went up Big Creek to where George "Wood'em-up" Yarneau showed us logging operations. Superintendent E. C. Olson sure gave us some meals, five kinds of dessert included. Paul Larsson, after much persuasion (by force) was taken from the table.

WEDNESDAY, JUNE 1.

Worked on our thinning plots. Most people get pay for working, but we paid to work.

THURSDAY, JUNE 2.

It rained this morning so we got a half a day to catch up on reports. Benson and James spent the morning by "putt-polishing." In the afternoon we put the finishing touches on the thinning plots and destructively criticized the plots of the others.

Do You Remember?

(Continued from page 36)

WHEN "Shorty" Bennett dropped the stadia rod on "Humpy" Ellis's head?

WHEN Prof. Watson herded a range management class into a leading cafe in Lewiston where we ordered coffee only to augment the lunches we had with us and which were consumed therein?

WHEN Bill Lansdon got his corduroys torn to shreds when returning from a field trip to Moscow Mountain?

WHEN the mensuration class staged a mock funeral march through the streets of Moscow?

WHEN Dr. Haasis got in Fred Newcomer's path during a contest at the barbecue in 1930?

WHEN the boys accused Dean Miller of not practicing forestry and he said, "Well, there are two kinds of bald heads. One kind is bald on the outside, the other—" and then he sat down?

WHEN Spence went fishing on the Clearwater River near Lewiston and claimed he "caught" an 8-pound salmon but was observed by the lumbering class coming out of a Lewiston meat market?

FRIDAY, JUNE 3.

Spent the morning cruising timber up Big Creek. Found out that we were not as good cruisers as we thought we were. About two p. m. we started for Moscow. At Spokane the party divided and "so-longs" and "farewells" were given. Cook, Brown, Opie and Sowder nursed the temperamental truck back to Moscow. By "nursing" is meant that part of the distance covered was by the main strength of pushing. Thus endeth the junior field trip of 1932.

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Instructor in Forestry and Associate Editor Idaho Forester

- ANDERSON, BERNARD A., M.S. (For.) '28, 618 Realty Building, Spokane, Wash. No change is reported in Andy's address. He is Junior Forester with the Office of Blister Rust Control.
- AXTELL, DONALD H., Ex-'29, 211 Fourteenth Ave., Lewiston, Idaho. Don is stock clerk of the Clearwater unit, Potlatch Forests, Inc. He writes, "My work consists mainly in keeping a perpetual inventory of all dressed and rough lumber manufactured at this plant."
- BAIRD, JOHN C., Ex-'28, Ranger, Treasure District, U. S. F. S., Pagosa Springs, Colorado.
- BALCH, A. PRENTICE, '29, Box 374, Ashton, Idaho. Balch is Junior Forester on the Targhee National Forest. Mr. and Mrs. Balch spent several days in Moscow, March 16-18, 1933. They were en route to California for a vacation.
- BARTLETT, STANLEY FOSS, Ranger Course, '21-'22, 129 Oak Street, Lewiston, Maine, Assistant Associated Press Editor, Lewiston (Maine) *Sun Journal*. A story and some verses from Bartlett's able pen appear elsewhere in this issue.
- BAUMANN, HERMAN, '24, Woods Superintendent, Fruit Growers' Supply Co., Susanville, California.
- BEALS, WILFRED F., '27, Forest Ranger, Elk Mountain District, Harney National Forest, with headquarters at Lauzon, South Dakota. Mr. Beals visited the school September 7, 1932, and acknowledged many campus changes. Mr. and Mrs. Beals have two children, both girls.
- BEDWELL, J. L., '20, M.S. Oregon State College, '24; Ph.D., Yale, '32. Jess is Associate Pathologist with the Division of Forest Pathology, U. S. D. A., Washington, D. C. The subject of his doctorate dissertation was "Factors Affecting Asiatic Chestnuts in the United States."
- BENNETT, CAREY H., '29, Bureau of the Biological Survey, Washington, D. C.
- BICKFORD, ALLEN, M.S. (For.) '31, Room 600 Stern Bldg., 348 Baronne St., New Orleans, Louisiana.
- BIELER, PAUL, Ranger Course '21-'22. Bieler is in Ogden, Utah, where he is active in the L. D. S. Church and Boy Scout organizations.
- BIKER, J. BERNAL, '28, Box 669, Trail, British Columbia.
- BOLLES, WARREN H., '26, M.F., Yale '29, 514 Lewis Bldg., Portland, Oregon. Bolles is working on the Federal Forest Resource Survey. He states, "I am beginning to feel at home in the Douglas fir region and feel that I want to stay here. I have become immune to the rain and have found a peace of mind and contentment within the last year which I never expected to be possible on the coast. No, I am not in love."
- BROWN, DR. FRANK A., '22 (dentist), 217 South Los Robles, Pasadena, California.
- BUCKINGHAM, ARTHUR, '30, Challis, Idaho, Forest Ranger, Challis National Forest.
- BURROUGHS, I. C., '27, M.F. Yale '28, c/o Texas Forest Service, Lufkin, Texas. Burroughs is Assistant Chief of the Division of Forest Protection.
- BURTON, LESLIE, '30, Halsey, Nebraska, District Ranger, Washakie N. F., Dubois, Wyoming. Burton spent three months this spring on the Nebraska National Forest.
- BUSH, BEN E., '03, Moscow, Idaho.
- CHAMBERLAIN, FRED B., 59 Albert St., Melrose, Massachusetts.
- CHAMBERLIN, GALE B., Ex-'22, Coeur d'Alene, Idaho. Chamberlin is in the wholesale lumber business.
- COCHRAN, ALLEN R., '28, M.F. Yale '30, Buena Vista, Virginia. "Al" is District Ranger on the Natural Bridge National Forest. He is married and is the father of one girl.
- COCHRELL, ALBERT N., Ranger Course, '22, Assistant Forest Supervisor, Pend d'Oreille National Forest, Sandpoint, Idaho.
- CONNAUGHTON, CHAS, '28, U. S. Forest Service, Washington, D. C. Connaughton is on detail from the Intermountain Forest and Range Experiment Station, Ogden, Utah.
- COONROD, MELVIN, '32, 1311 East State Street, Boise, Idaho. Coonrod expects to be driving a "cat" on the Boise National Forest this summer.
- COSSITT, FLOYD M., '24, Technical Assistant, U. S. Forest Service, Newport, Washington.
- CUMMINGS, LEWIS A., '25, M.F. Yale '29, District Ranger, Rio Grande National Forest, South Fork, Colorado.
- CUNNINGHAM, R. N., '17, Forest Economist, Lake States Forest Experiment Station, University Farm, St. Paul, Minnesota.
- DANIELS, A. S., '23, 306 W. 23rd Avenue, Houston, Texas. Daniels is chemist and Assistant Superintendent for the Southern Pacific Wood Preserving Works. He writes, "Work

consists of supplying all the treated forest products used by the Atlantic System of the Southern Pacific Railroad, also a considerable amount of cross ties for the Pacific System of the same railroad. In addition we do quite a bit of investigative work on new preservatives which are submitted to us. We have an experimental treating plant that is kept in almost continual operation on the various phases of wood preservation. Toxicity tests are made on all of our creosote purchases, and a certain amount of experimental work is also done on this subject. This company maintains eight test tie sections, the inspection and care of which are part of the duties of this laboratory. Recently I donated to the Houston Public Library the last seven issues of the *Idaho Forester*. The library expressed considerable satisfaction on receiving this publication."

- DAUGHERTY, CHAS., Ex-'22, Forest Ranger, Greenhorn District, Sawtooth National Forest, Hailey, Idaho.
- DAVIS, ROBERT, '28, 2668 Grant Avenue, Ogden, Utah. Davis is with the U. S. Forest Service.
- DECKER, ARLIE D., '13, M.F. Yale '17, 2224 Rockwood, Spokane, Washington. Arlie is in the cedar pole business for the Weyerhaeuser interests.
- DE LA CRUZ, EUGENIO, '26, M.F. Yale '27, 1214 Miguelin St., Sampaboc, Manila, P. I., Assistant Chief of the Division of Forest Lands and Regulations, Philippine Forest Service. Eugenio is the proud father of three children, one girl and two boys. The youngest, a boy, was born February 8, 1933.
- DOYLE, IVAN S., '26, Potlatch Forests, Inc., Headquarters, Idaho. The forestry students gratefully acknowledge "Ike's" courtesy to them on the Headquarters trip in October.
- DRISSEN, JOHN P., '21, Browning, Montana.
- EASTMAN, VIRGIL H., '31, U. S. F. S., Orofino, Idaho.
- EDDY, LESLIE, Ex-'24, Beaver Creek Ranger Station, Coolin, Idaho.
- ELLIS, F. GORDON, '28, Lakeview, Oregon.
- FARMER, LOWELL J., '30; M.S. (For.) '31, 403 Federal Bldg., Salt Lake City, Utah. Farmer is Junior Entomologist, Bureau of Entomology, U. S. D. A., and proud father of a son born December 17, 1932.
- FARRELL, J. W., '22, Challis, Idaho. He is forest supervisor of the Challis National Forest.
- FAVRE, C. E., '14, M.S. (For.) '15, Kemmerer, Wyoming. Favre is forest supervisor of the Wyoming National Forest.
- FENN, LLOYD A., '17, LL.B., U. of Montana '26, Superintendent of Schools, owner of the *Kooskia Mountaineer* and attorney at law, Kooskia, Idaho.
- FERGUSON, RAY S., Ranger Course, '22, Selway National Forest, Kooskia, Idaho. Ferguson is Ranger of the Middle Fork District. He writes, "One of the biggest jobs on my district this year is the completion of the visibility studies and the start of our improvement plan. An interesting study being carried on this year is type mapping by airplane. Jas. Yule from Missoula, had a strip of pictures made along my boundary on an unmapped area. We took the pictures and outlined every change visible. Then from sample plots on the ground we made a physical inventory and tied it to the picture. The balance of the types were determined by comparison, using the sample plots as a starting point. We will not have a chance to test the results until May. It is quite interesting and I believe it will 'pan' out."
- FICKE, HERMAN, '31, U. S. F. S., St. Maries, Idaho. Herman has been in Moscow from time to time.
- FIELD, WALTER D., '26, is assistant land agent for Potlatch Forests, Inc., Lewiston, Idaho.
- FIFIELD, CHAS. E., '32, is taking advanced work in the University the current year and hopes to return to his job with the Office of Blister Rust Control the coming summer.
- FISHER, DON C., M.A. '25, Yorktown, Virginia. Fisher is Assistant Chief Ranger, Colonial National Monument, National Park Service. He writes: "National Park work is in many ways similar to forestry although the chief object differs. In forestry it is preserve the forest. In park work—help people enjoy the park. Very similar to public relations work in forestry."
- FOLSOM, FRANK B., Ex-'22, Senior Forest Ranger, Deschutes National Forest, Bend, Oregon.
- FOX, CHARLES E., '28, Principal Leland (Idaho) School.
- FRITCHMAN, HOLT, '31, is at his home in Naches, Washington, awaiting employment.
- GARIN, GEORGE ILLICHEVSKY, '29, M.S. (For.) '30, U. S. F. S., Dixon, Montana.
- GARNER, L. H., Ranger Course '23, Hailey, Idaho.
- GATLEY, HOWARD A., Ranger Course '23, Scout Executive, Kenosha, Wisconsin.
- GENAUX, CHARLES M., M.S. (For.) '29, Department of Forestry, University of Idaho, Southern Branch, Pocatello, Idaho. Genaux was field assistant at the Priest River Forest Experiment Station last summer.

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GERRARD, PAUL H., '23. Assistant Forest Supervisor, Clearwater National Forest, Orofino, Idaho. Gerrard was in charge of Blister Rust Control operations on the Clearwater during the past season.

GILLHAM, NORMAN F., '26, 309 W. Elm, Flagstaff, Arizona, with the U. S. Biological Survey.

GODDEN, FLOYD W., '27, Assistant Forest Supervisor, Idaho National Forest, McCall, Idaho. Floyd paid the school a visit March 13, 1932, and was accompanied by his wife and two children.

GREGORY, CHAS. A., Ex-'28, c/o U. S. F. S., Halsey, Nebraska. "Spike" was married to Germaine Gimble, a graduate of the University of Idaho, in July, 1932, in Colorado.

GUDMUNSEN, ORIN S., Ex-'26, 5614 Wellington Avenue, Chicago. Gudmunsen's record since leaving Idaho is as follows: B.A., St. Olaf College '27; C.T., Luther Theological Seminary '31; now pastor of the Parkside Lutheran Church, Chicago.

GUERNSEY, WILLIAM G., '29, 618 Realty Bldg., Spokane, Washington, office of Blister Rust Control.

GUSTAFSON, CARL, '26, M.S. (For.) U. of California '29, Sierra National Forest, Northfork, California.

HAMMOND, GEORGE M., '20, Vice President and Assistant General Manager Bowman Lumber Co., 1622 San Fernando Road, Glendale, California.

HAND, RALPH L., Ranger Course '22, Ranger Roundtop District, St. Joe National Forest, St. Maries, Idaho.

HARLAN, PAUL M., '25, 1329 Clay St., San Francisco, California. Harlan is Production Manager for M. E. Harlan, Advertising. Paul writes: "My only contact with forestry since graduation has been with a redwood shingle manufacturer who went broke six months after I began handling his advertising. I still think I'm good. However, agriculture, that step-sister of forestry, must be a hound for punishment, as I am still acting as advertising counsel for six or seven agricultural advertisers. Oddly enough or not, one of them sells fertilizer. Seriously, I should like to try my hand at merchandising and advertising some product of good old *pinus* or *acer*. I believe I could show the public some interesting *quercus* that would make the cash register sing."

HARRIS, THOMAS H., M.S. (For.) '30, 618 Realty Bldg., Spokane, Washington. Harris is Junior Forester in the Division of Blister Rust Control, U. S. D. A. He writes: "At present I am stationed at Berkeley, California, at the Blister Rust Control Office on the University of California campus

where several of us are engaged in preparing a sugar pine inventory of the State of California. This survey is to make possible a policy for the control of Blister Rust in the sugar pine stands of the state. Type maps showing the location of sugar pine are being prepared for each forest."

HATCH, ALDEN B., '28, M.F. Yale '29, Harvard Forest, Petersham, Massachusetts.

HEPHER, W. STANLEY, '31, M.S. (For.) '32, Boswell, B. C., Canada. Hepher was co-author with Dr. E. C. Jahn of an article on "Action of Ammonium Sulphite on *Abies grandis*" published in the *Paper Trade Journal*, November, 1932. He plans to work for a Ph.D. degree in the field of wood products.

HILL, EDWARD B., '31, gives his address as that of U. S. Forest Service, Ogden, Utah. He has been busy with timber surveys, land exchanges and insect control work the past year and till December 27, 1932 was in company with Tyler Gill, '31. Mr. Hill reports he and Mrs. Hill have a daughter, Helen Louise, born February 12, 1932.

HILLMAN, WILLIAM P., Ex-'13, Assistant Supervisor, St. Joe National Forest, St. Maries, Idaho.

HOCKADAY, JAMES M., '31, Moscow, Idaho.

HOFFMAN, H. C., '28, 46 Holly Rue Apts., Ogden, Utah. Hoffman is technical assistant on the Cache National Forest.

HUME, JOHN F., '31, Route 2, Meridian, Idaho. Jack is assistant working boss on about 500 acres in the Idaho Valley and is applying formula V to 96 acres of bearing apple trees.

JACKSON, TOM, '19, resident manager, lumber operation, Fruit Growers' Supply Co., Hilt, California.

JEMISON, GEORGE M., '31, Junior Forester, Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Montana. George's "Climatological Summary for the Priest River Forest Experiment Station" was published last year. He writes: "At present I am in the Washington office on a 'training' detail, studying statistical methods. I am working on a fire-weather analysis and am enrolled in two courses in advanced statistics in the Department of Agriculture night school. Have a sore neck from sight-seeing. This is too great a change from Moscow."

JOHNSON, R. B., '32, Hailey, Idaho, Senior Forest Ranger, Sawtooth National Forest, Hailey, Idaho. "Bob" visited the school during the past winter.

JOHNSTON, ROYAL, '27, assistant time keeper, Potlatch Forests, Inc., Lewiston, Idaho.

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JOHNSTON, H. W., Ex-'17, St. Michael, Alaska.
Johnston is manager of the F. P. Williams
Trading Co. and U. S. Commissioner.

KEENE, EDWARD L., '29, Targhee National For-
est, St. Anthony, Idaho.

KEMP, R. L., Ex-'27, Spirit Lake, Idaho. Mr.
and Mrs. Kemp are parents of a boy born
February 16, 1933. The newcomer, accord-
ing to Dick's report, was ushered out of
the hospital in a red stag shirt and wear-
ing a pair of calked shoes.

KENNEDY, FRED H., '29, writes: "I was trans-
ferred from the Weiser National Forest in
Region Four to the Northern Rocky Moun-
tain Forest and Range Experiment Sta-
tion, Miles City, Montana, in this region
on August 1 of last year. I have been as-
signed to the branch of Range Research.
The project that I am working on is the
management of short grass ranges in east-
ern Montana."

KLEPINGER, FRANKLIN, '30, 1137 Thirty-sixth
Place, Los Angeles, California.

KREUGER, OTTO C. F., '29, 111 East 5th, San
Bernardino, California. Otto is a county
forester in the California Extension Ser-
vice.

KRUMMES, WILLIAM T., '30, acting supervisor
Crescent Lake Migratory Bird Refuge, U.
S. Biological Survey, Mumper, Nebraska.

LANGER, CHARLEY J., '30, Fort Duchesne, Utah.
Langer is Junior Forester with the Indian
Service, and has charge of all forest and
range management work on the Uintah and
Ouray Indian reservation. He likes the
Indian Forest Service very much.

LANSDON, WILLIAM H., '27, 1502 N. 6th Street,
Boise, Idaho.

LEBARRON, RUSSELL K., '31, Lake States For-
est Experiment Station, St. Paul, Minne-
sota.

LEFLER, LOWELL, Ranger Course, '24, 3597
Sandborn Ave., Lynwood, California. Lef-
ler is mechanic for the Arco Brake Co., Los
Angeles, California. He was married in
December, 1930 and has one daughter.

LEHRBAS, MARK M., '27, 348 Baronne St., New
Orleans, Louisiana. "Polly" is assistant
forest economist, Southern Forest Experi-
ment Station, assigned to the Forest Sur-
vey.

LINDSAY, CLIVE J., '31, Moscow, Idaho. Clive
is taking special work this school year.

LINDSTROM, C. E., Ex-'26, district representa-
tive, Weyerhaeuser Forest Products, Box
65, Cambridge, Massachusetts.

LOMMASSON, THOMAS, Ex-'17, Range Manage-
ment Division, U. S. F. S., Missoula, Mon-
tana.

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OREGON

MCLAUGHLIN, ROBERT P., '25, M.F. Yale '26, Ph.D. Yale '32, 118 Grand Avenue, New Haven, Connecticut. Bob's dissertation on "The Comparative Anatomy of the Wood of the Magnoliales" is to be published in an early issue of *Tropical Woods*. He is working part time with the Yale Landscape department and also doing some independent research.

MAKARA, FRANK R., M.S. (For.) '32, Department of Cellulose Chemistry, McGill University, Montreal, Canada.

MALHOTRA, DES RAJ, '25, Assistant Conservator of Forests to the State of Kashmir at Jammu, Kashmir State, India.

MALMSTEN, H. E., '17, 231 Giannini Hall, University of California, Berkeley, California. Malmsten is assistant professor in the California School of Forestry. His specialties are forest protection and range management.

MARTIN, PAUL J., '18, 705 N. Fiftieth Street, Seattle, Washington.

MILLER, DOUGLAS R., M.S. (For.) '32, 231 Giannini Hall, Berkeley, California. Miller is Junior Forester with the Division of Blister Rust Control and is working with T. H. Harris on a sugar pine inventory of the State of California.

MILLER, WILLIAM BYRON, '22, M.S. (For.) California '25, Fort Bayard, New Mexico. Miller is Associate Range Examiner, U. S. Biological Survey, and has been on furlough since March, 1931, recovering from illness.

MITCHELL, WILLIAM W., '28, 1105 Madison St., Wilmington, Delaware.

MOODY, VIRGIL, '17, Ranger, Lakes District, Coeur d'Alene National Forest, Coeur d'Alene, Idaho.

MORGANROTH, EARL S., '32, c/o George Williams, Gary Station, Route 1, Boise, Idaho. Morganroth will be lookout-platting agent on the Wallowa National Forest next sum-

mer. He intends to return to school and work for a higher degree as soon as possible.

MUNSON, O. C., '21, 1367 Shasta Ave., San Jose, California. Munson is supervisor of maintenance and installation work for the Pacific Telephone and Telegraph Co.

MYRICK, E. H., Ex-'17, Orofino, Idaho. Mr. Myrick is Forest Supervisor, Clearwater National Forest. He was transferred from the same position on the St. Joe National Forest February 1, 1932.

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NERO, E. T., '23, Moscow, Idaho. Nero is agent for the Northern Life Insurance Co. of Seattle, Washington.

NEWCOMER, FRED R., '31, Banner, Wyoming. Newcomer is working on a ranch and waiting for a Forest Service appointment. His senior thesis, entitled, "Moisture-Absorbing and Retaining Capacities of Various Tree Packing Materials," was published in the *Journal of Forestry* for April, 1933.

OLSEN, C. C., '26, Superintendent of Construction, Cascade National Forest, Eugene, Oregon. Olsen published an article entitled "Peaks Dominate Cascade Forest" in the *Eugene Morning News*, November 4, 1932.

OLSON, OSCAR A., JR., '27, Marshall, Missouri. Olson is manager of the Page Milk Company's large establishment at Marshall.

OTTER, FLOYD, '29, Instructor in School of Forestry, University of Idaho, Moscow. Floyd has been on leave of absence for the past year working for his master's degree at the School of Forestry and Conservation, Ann Arbor, Michigan.

PAGE, MILFORD M., '29, Idaho Falls, Idaho. Page is in the photography business.

PARSONS, RUSSELL M., '23, Resident Engineer, Idaho Bureau of Highways, Coeur d'Alene, Idaho.

PATRIE, C. R., '21, Forest Supervisor, Colville Indian Reservation, Nespelem, Washington.

PECHANEC, JOE, '32, Moscow, Idaho. Joe returned to school in February and is taking special graduate work.

PHELPS, EUGENE, '27, 235 N. Long Avenue, Chicago, Illinois.

PIKE, G. W., '27, M.F. Yale '28, Deadwood, South Dakota. Galen is on the supervisor's staff of the Black Hills National Forest, and reports that the depression is stimulating land exchange activity.

PLUNGUAN, MARK, M.S. (For.) '31, Department of Cellulose Chemistry, McGill University, Montreal, Canada.

POTTER, ARTHUR, Ex-'26, Assistant Forest Supervisor, Boise National Forest, Boise, Idaho.

PUGH, L. R., '26, Pugh is sales manager for the Russell and Pugh Lumber Company, Springston, Idaho.

RENSHAW, E. W., '25, Senior Ranger, St. Joe National Forest, Avery, Idaho.

RETTIG, E. C., '19, 203 15th Ave., Lewiston, Idaho. Mr. Rettig is Land Agent and Forester for Potlatch Forests, Inc.

RODNER, JACK W., Ex-'24, Emida, Idaho.

ROWE, PERCY B., '28, M.F. Yale '30, 332 Gianini Hall, Berkeley, California.

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RUTLEDGE, R. H., Regional Forester, U. S. Forest Service, Ogden, Utah.

SAJOR, VALENTIN, '26, M.F. Yale '27, 1213 Constancia, Manila, Philippine Islands. Sajor is forester with the Bureau of Forestry, Philippine Government, serving as Assistant Chief, Division of Licenses.

SALING, WALLACE M., '28, M.S. (For.) '29, junior range examiner, Boise National Forest, Boise, Idaho. "Smoky" worked on bug control on the Wasatch National Forest last fall, and was on detail during the winter in the Ogden regional office and at the Intermountain Forest and Range Experiment Station. Mr. and Mrs. Saling visited the University April 5, 1933. "Smoky" was delighted to renew acquaintances.

SARGEANT, HOWARD J., '30, 428 Scarritt Bldg., Kansas City, Missouri. Sargeant is Junior Forester with the Biological Survey, Land Acquisition Division. He is assigned to examination-appraisal work in the central states. On a western trip he was able to visit his Alma Mater September 22, 1932.

SCHOFIELD, W. R., '16, 2728 Ohio St., Sacramento, California. Schofield is Forest Engineer and Tax Economist with the Tax Research Bureau of the State of California.

SCHUMAKER, FRANK, '31, Blackfoot, Idaho. Schumaker was on the protection force of the Kaniksu National Forest last summer, and with the U. S. Reclamation Service from September to November.

SCRIBNER, C. H., Ranger on the St. Joe National Forest, St. Maries, Idaho.

SHANER, F. W., Ranger Course, '23, Ranger, Selway National Forest, Kooskia, Idaho.

SHANK, PAUL J., '31, Assistant Ranger, Idaho National Forest, Warren, Idaho. Shank's work includes timber sales, construction, projects for unemployment relief and fire protection. He was recently married.

SHARMA, P. D., M.S., (For.) '22, Technical Adviser to the forestry department in the State of Gwalior, India.

SHARP, ANDREW G., M.S. (For.) '29, Kapuskasing, Ontario. Sharp has been promoted from wood technician to sulphite engineer by the Spruce Falls Power and Paper Co. He writes: "After having spent the last two years working as contact man between the woods department and the mill I am now specializing on technical problems in the sulphite mill. The work is interesting and as this mill produces several grades of sulphite for shipment along with their requirements for newsprint a high degree of technical control is required and maintained."

SNOW, E. A., '25, Arapaho National Forest, Hot Sulphur Springs, Colorado.

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SOWDER, ARTHUR M., '25, M.S. (For.) '27, Assistant Professor of Forestry, School of Forestry, University of Idaho, Moscow.

SPACE, JACKSON W., '27, Senior Forest Ranger, U. S. Forest Service, Pecos, New Mexico.

SPACE, RALPH S., '25, Assistant Supervisor, Blackfoot National Forest, Kalispell, Montana.

SPENCE, LITER E., '28, M.S. (For.) University of California '30. Liter is with the Idaho School of Forestry, teaching Range Management and Wood Technology.

STANLEY, WILFRED B., '30. Don Axtell reports that "Bill" is scaler for a Weyerhaeuser logging unit near Kelso, Washington.

STAPLES, H. W., '20, Assistant Cashier, First National Bank, Moscow, Idaho.

STILLINGER, C. R., Special '19, Associate Pathologist, 406 Federal Bldg., Spokane, Washington.

STONEMAN, J. W., '23, Colbert, Washington. "Stony" is manager of the Greenleaf summer and winter sports resort.

STOFFER, DAVID J., M.S. (For.) '32, 273 Durand Street, East Lansing, Michigan. Stoffer is taking advanced work at Michigan State College.

STOWASSER, CLARENCE, '30, 525 West Summit Avenue, Coeur d'Alene, Idaho.

TAYLOR, JOHN, Ex-'32, Extension Forester for North Dakota, Bottineau, North Dakota. He has published a check list of North Dakota Woody Plants. He plans to continue his forestry studies at Idaho next fall.

THORNTON, JAMES A., Ex-'12, Coeur d'Alene, Idaho.

TOOLE, ARLIE W., '27, Klamath Agency, Oregon. Toole is Forest Assistant, U. S. Indian Forest Service, Klamath Indian Reservation, Oregon, in charge of timber sales and roads.

WARD, RAY, Executive Assistant, Colville National Forest, Republic, Washington.

WALRATH, FAIRLY J., '27, Orofino, Idaho.

WENDLE, REX, Ex-'30, Equipment Clerk, Bureau of Highways, Coeur d'Alene, Idaho. Wendle's work consists of purchasing supplies and keeping equipment records for highway machinery in the five northern counties.

WHEATON, RODGERS G., '24, M. F. Yale '25, Manufacturer's Agent, 631 White St., Springfield, Massachusetts.

WHITE, HAROLD Z., '26, 1113 10th St., Lewiston, Idaho. White is Superintendent of Dry Kilns, Potlatch Forests, Inc. He announces the birth of a daughter on March 29, 1933.

WILLIAMS, GUY V., '27, Mountain States Telephone and Telegraph Co., Boise, Idaho.

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WOODWARD, DOREN E., '30, Federal Bldg., Winona, Minnesota. Woodward is Junior Forester with the Division of Land Acquisition, Bureau of Biological Survey, detailed to the Upper Mississippi Refuge.

YATES, DONALD, '13, 3207 Franklin Avenue, Seattle, Washington. Yates is with the Exter Investment Co., Skinner Bldg., Seattle, Washington.

YOUNGBLOOD, FRANK, Ranger Course '23, Ranger, Weiser National Forest, Council, Idaho. Youngblood was transferred from the Minidoka in June, 1932.

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